Indian Archaeology 1974-75 – A Review



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INDIAN ARCHAEOLOGY 1974-75
—A REVIEW

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PREFACE

This annual *Review,* like its predecessors, incorporates matter on the archaeological activities in the country during the year 1974-75. As usual the material has come from diverse sources, and I gratefully acknowledge the cooperation of all those whose contributions have been included here. As already known, these have been done without making any basic changes in respective facts and interpretations thereof.

I heartily thank my colleagues in the Archaeological Survey of India who have helped me in bringing out this issue within a very short time.

New Delhi
1 May 1979

B. K. THAPAR

CONTENTS

INDIAN ARCHAEOLOGY 1974-75
—A REVIEW

I. EXPLORATIONS AND EXCAVATIONS

ANDHRA PRADESH

1. EXPLORATION IN DISTRICTS ADILABAD AND KARIMNAGAR.—During the course of his exploration, Shri Thakur Raja Ram Singh, an advocate of Peddapalli, discovered several Stone Age sites in the mid-Godavari valley.

Early Stone Age tools were found at Naspur (locality 1) in Luxetipet Taluk, District Adilabad and Godavari-khani (localities 1 and 2), Medpalli-Malkapur (localities 2 and 3), Ramgundam-Buchiahpalli (locality 1) and from Anthergaon to Manthani, a stretch of 35 km from west to east and 20 km north to south touching the Ramgiri hills (Raki ranges), along the southern bank of the Godavari in Peddapalli Taluk, District Karimnagar. The tools are mostly made on quartzite and rarely on chert. The tool-types (pl. I A) include a variety of handaxes, including arrow and spear-pointed tools and picks, cleavers, ovates, discoids, flakes and scrapers on flakes. Occasionally, rostrocarinates and unifacial and bifacial pebble tools were also found. The length of the handaxes range from 8 to 20 cm.

Middle Stone Age tools were found at Naspur (locality 2) and adjacent villages in Luxetipet Taluk, District Adilabad, and Godavari-khani (localities 1 to 3 and 5), Medpalli-Malkapur (localities 4 to 6 and 9), Ramgundam-Buchiahpalli (localities 2 and 6), Goelwada, Sundilla, Kannal (Bodagutta) and Gundaram in Peddapalli Taluk District Karimnagar. The tool-types include cores and flakes with or without prepared platforms, flake-blades, a variety of scrapers—round, biconvex, convex, concave, side, end, tanged—knives or cutting tools, notches, noses, unifacial and bifacial points, borers, awls, spear-heads, arrow-heads with or without tang and miniature handaxes and rarely burins. The intentionally-thinned butt ends of the points and spearheads indicate that they were hafted.

Fossils including a partly broken jaw bones of *Bos namadicus* and a piece of *Serves antler* were discovered at Gundaram and Malkapur.

Amongst the many Late Stone Age sites located during the exploration, mention may be made of Thakkallapalli (Bugga, localities 1 and 2 and Sabbitham near Goun-gundam, a seasonal waterfall in Ramgiri hills. The microliths are made of varieties of chert, chalcedony, agate, carnelian and jasper The blade cores are of three types: conical based, flat based and oblique based. The assemblage includes primary flakes chips, parallel-sided blades, blunted backed blades, including lunates variety of points m high proportion and occasionally trapezes, triangles and burins There are but a few scrapers in the assemblage. However, in a few sites like Bugga (locahty 1) and Bodagutta the pebble and core scrapers were found to be smaller in size than the microliths. No pottery is associated with these sites.

2. EXPLORATION IN DISTRICT GUNTUR.—Shri I. K. Sarma of the South-eastern Circle of the Archaeological Survey of India[1], assisted by Dr T. V. G. Sastry and Shri D. Hanumantha Rao, explored the hillocks towards the west of the village Viakuntapuram, and collected early historical pottery such as black-and-red, fine black-slipped, red-slipped wares, and the Rouletted Wares. Within the fields on way to Amaravati, a number of megalithic cairn-circles with or without cist-chambers and capstones were noticed. Megalithic Black-and-red Ware sherds and pieces of bones were collected from a transepted cist.

Shri I. K. Sarma, assisted by Sarvashri D. Hanumantha Rao and K. S. Mani, also located an extensive, early historical mound, of 5 to 6m in height, at Juna-Chundur. Large quantities of bricks, black-and-red, red-slipped and black-slipped wares, bone pieces, lead and copper coins of late Satavahana period were obtained from the site. A temple of Venugopala, in the centre of the village, having early *adhishthana,* raised on dressed and neatly moulded lateritic blocks, recalling the early Salankayana temples at Peddavegi in West Godavari, and loose sculptures such as Vinayaka, Trimurti-plaque, Nandi, etc., of red sandstone, a *linga* with *yoni,* and Venugopala belonging to *circa* tenth century A.D. were also noticed at this site.

3. EXCAVATION AT AMARAVATI, DISTRICT GUNTUR.—The South-eastern Circle of the Survey resumed *(Indian Archaeology 1973-74—A Review,* p. 4)[2] excavation at Amaravati *stupa-site* (pl. IB). The work was directed by Shri I. K. Sarma, assisted by Shri D. Hanumantha Rao, the objectives being: (i) to link up stratigraphically the eastern *ayaka* and the drum of the *Mahachaitya* with the trenches excavated earlier; and (ii) to know the structural phases of the *Mahachaitya,* particularly its nature during the pre-Satavahana periods.

The excavation revealed that the core of the *stupa* contained successive earth fillings made during the last two centuries out of indiscriminate diggings. A huge pit was found right through the core of the *stupa* to a depth of 4.75 m. It may be recalled here that when Burgess (1887) visited for the second time, he noticed that the *stupa-site* had become a big tank. However, the four *ayaka* platforms and part of the *pradakshinapatha* of the Satavahana period (Period III) appear to be comparatively undisturbed.

4. EXCAVATION AT GOLCONDA, DISTRICT HYDERABAD.—In continuation of last year's work (1973-74, p. 5), the Department of Archaeology and Museums, Government of Andhra Pradesh, excavated a mound on the western side of the Summer House.

Excavation revealed a residential complex having a central hall (15.65 x 9.00 m) with entrances on south and east, and attached with five rooms on the southern side. On the eastern side a kitchen with attached bathroom was exposed. Another hall (11.00 x 3.85 m) was exposed on the western side of the central hall. A small road running north-south and joining the main road exposed earlier, was unearthed in the close proximity of this complex.

Another house-complex was exposed from a low lying mound on the north of Summer House. This complex is enclosed by walls running north-south on the east and west, the exposed length being 36 m. The complex had a central hall (3.35 x 2.90 m) with a courtyard and two rooms (305 x 2.50 m and 2.90 x 2.50 m) on either side. The rooms were

[1] The Archaeological Survey of India is referred to in the following pages as the 'Survey'.

[2] This publication is referred to in the following pages by the year only.

internally connected by small door-ways. At the rear end, on the south-eastern comer of the complex were unearthed a small kitchen, bathroom and latrine which were connected to a drain partly covered by stone-slabs. The drain, in turn, was connected to a soak-pit. At the centre of the complex two cisterns (l.80 x l.25 x 0.85 m and 1.85 x 1.55 x 0.90m), prefacing the courtyard were laid bare. One of them seems to have been used as a fountain. A conduit pipe which fed the tank and being connected to another cistern near the well was also traced.

Yet another residential complex, in the same alignment and little away from the above one, was also laid bare. It had large central room and two adjacent rooms. Two halls in front of the central room were also unearthed. A passage and flight of steps were also exposed.

A little away from the above complex, a wall running zigzag in plan for about 50 m with pillar-bases at regular intervals of 585 m was exposed. This might have been a horse stable, as plenty of horse-shoes were recovered from the area. At one corner of this wall were two rooms which might have served as guard-rooms.

One more residential complex was unearthed towards north of the throne palace. It consisted of three rooms with a verandah. Two small platforms were exposed in front of the verandah. This structure had been plastered and a good number of stucco remains with designs were also recovered. A conduit pipe line, running to a length of 5.55 m, was exposed in close proximity of this structure.

Noteworthy finds recovered from the site include: copper coins and needles; iron poniard, axe, arrow-heads, scissors, knives; terracotta elephants; copper and silver rings, inset with carnelian and jasper stones; beads of faience, paste and glass with segmented, gardooned, cylindrical and disc types; gamesmen made of ivory; and glass bangles. A rich repertoire of pottery, including paper-thin variety and Celedon Ware represented in types like chalices, dishes, etc., and a few with Chinese script, was collected. A miniature plaque, carved with two Brahmanical deities, is another noteworthy find .

5. EXCAVATION AT DHULIKATTA, DISTRICT KARIMNAGAR.—The Department of Archaeology and Museums, Government of Andhra Pradesh, excavated Dhulikatta and encountered a baked brick wall of six courses, running north-south, built over rubble foundation, in the trench across the mud fortification. Another wall, running parallel to the latter and having a width of 1.6 m and of exposed length of 5.2 m was encountered in another trench. The size of the bricks was 53 x 30 x 10 cm. In a trench in the middle of the mound, a wall with five courses was encountered at a depth of 80 cm.

The structures can be dated to Satavahana period on the basis of pottery including black-and-red, dark red and red wares, and two Satavahana coins, carnelian bead, iron knife and a nail, etc., recovered from the excavation. However, a few microliths such as cores, blades and flakes were encountered below a sterile layer which underlies the Satavahana deposit.

5. EXCAVATION AT KADAMBAPUR, DISTRICT KARIMNAGAR.—The Department of Archaeology and Museums, Government of Andhra Pradesh, conducted excavation at Kadambapur, an extensive megalithic site, 8 km north of Peddabankur situated on the bank of the river Maneru, a tributary of the river Godavari. Five megaliths and a small area of the habitation site were excavated, the results of which are as follows:

Megalith I is a pit-burial oriented east-west, cut to a depth of 2 m and capped by a huge capstone measuring 7>0x4>0x0"4 m. It is marked by double stone-circles, with

the outer measuring 9.75 m and the inner 7.60 m in diameter and having 25 and 21 large lateritic boulders respectively. Cairn packing inside the circles was raised to a height of 1 m. A damaged skull, a few fragments of longer bones such as, femur, tibia, fibula, etc., were seen arranged in roughly articulated form. Funerary pottery was interred in three levels, bigger red ware vases in the upper, ring-stand with shallow dish in black ware in the middle and smaller pots such as bowls and dishes in the lower level. Two javelins, the larger one measuring 1.25 m in length, were kept parallel to the skeletal remains. A curved dagger with copper hilt was kept near the skull at a comer of the pit.

Megalith II was similar to the above one in construction, except in having a smaller capstone. Two skulls, a mandible and few long bones were interred in roughly articulated condition. Two conch-shells, were seen deposited near the skulls. A small dagger was placed near one of the skulls and a pair of javelins of 85 cm in length were placed over the pottery. Excepting the skulls, all the other bones were covered with funeral pottery. The pottery recovered includes black, dull-red and red wares, represented bv vases, hour-glass type ring-stands, etc. The Black-and-red Ware was conspicuous by its absence.

Megalith III (pl. II) was a pit-burial, covered by a huge capstone, measuring 3·35 x 1·83 x 0.46 m. The burial was bound by a stone-circle (7.60 m in diameter) of 19 lateritic boulders containing cairn packing. The pit was rectangular (2.3 x 1·0 m) on plan, oriented north-south, dug to a depth of 1.10 m and filled with lateritic *morum* and disintegrated rock. On the pit floor lav a complete skeleton over 8 cm thick soft clay, with the head towards north supported by small stones, one each on either side. Two gold wire earrings were found flanking the mandible. A dagger (28.5 x 5 cm) was found thrust into the clavicle which was slightly dislodged from the original position. The phalange bones of both hands were found pushed into two bottom-cut conches. It is interesting to note that the right tibia and fibula, placed on stones, were found cut obliquely and the heel bones missing. The pottery recovered from the burial includes: two handmade flat based, ill fired, dull red ware jars; seven dull red ware ring-stands with Black-and-red Ware funnel-shaped chalices, kept over the pelvic bone; and Black-and-red Ware bowls. It was observed that altogether thirty-three pots had been kept all over the body leaving only the skulls open.

Megalith IV was a disturbed port-holed cist, bound by a stone-circle and cairn packing. The extant northern orthostat was provided with a port-hole in the middle, closed by a lateritic slab. This secondary articulated burial, over a bed of clay and *morum* spread over a floor-slab, yielded two skulls and other long bones. A crescentic tanged battle-axe and a knife were found kept near the skulls. All the pottery recovered from the burial is wheel-made.

Megalith V was similar to Megaliths I, II and III, except that the skeletal remains including two skulls were heaped without articulation. Seven iron implements, such as javelin, spearhead, arrowhead, dagger, knife and a terracotta disc were recovered. Pottery recovered from the burial includes: Black-and-red Ware dishes and carinated deep bowl; hour-glass type ring-stands; black ware vase and a funnel-shaped chalice; and storage jars in red ware.

Excavation at the habitation site yielded from the lower levels, red-slipped ware with incised decoration, dull red ware, conical bowls and coarse Black-and-red Ware. Last mentioned ware continues to occur in the upper levels along with red ware represented by lid-cum-bowl.

Some of the rock-shelters situated on the slopes of the hills were also tapped and only a few sherds of coarse red and dull red wares were encountered.

7. EXCAVATION AT PEDDABANKUR, DISTRICT KARIMNAGAR.—In continuation of last year's work here the Department of Archaeology and Museums, Government of Andhra Pradesh, conducted excavation at Peddabankur with a view to: (i) tracing the western wall of the Enclosure III; (ii) connecting stratigraphically the drain and wells with the Enclosure II; and (iii) exposing a brick structure adjacent to the main road.

In the excavation, the western wall of the Enclosure III was exposed and was found that the enclosure is rectangular in plan (41.6 x 4.3 m), with entrances (7.5 m) on north and south. The width of the walls of the enclosure is 1.70 m. The well built of wedge-shaped bricks, encountered earlier, is in the north-eastern comer of the enclosure. Even today, it is believed to be auspicious to have a well or a water source inside the enclosure on the north-eastern comer which is known as *Lakshmisthana.* An oval structure (11.60 x 5.35 m) with an entrance (2.0 m) on the west, at the centre of the enclosure, was also unearthed. This structure seems to have had brick superstructure and tiled roof. Two small brick paved cisterns, hearths, iron slags and objects encountered in this structure indicate that it might have been used as an iron smelting and forging factory.

A circular brick platform 3.15 m in diameter, raised over a rubble basement, was unearthed in Enclosure II. Adjacent to this platform, a floor made of rubble and gravel, embedded with iron slags and a rectangular brick-built cistern with floor made of rammed lateritic *morum* were also exposed. The structure appears to be a blast furance.

Excavation in the area west of Enclosure III laid bare: rubble foundation of an east-west oriented oval house; two hearths built of bricks outside the house; a small rectangular platform, probably base of a silo, inside the house; a brick platform fixed with flat stone probably for washing, outside the house; and a circular rubble basement embedded with iron slags and a sandstone for sharpening iron implements. The entire complex may belong to the late Satavahana period, on the basis of pottery and other antiquities recovered from the area in the excavation.

Digging in the area near Karimnagar-Peddapalli road, revealed two walls running east-west and north-south, measuring 9.85 and 3.75 m respectively in length.

Antiquities recovered from the excavation include: nails, rivets, rings, knives, chisels, hooks, hoes, sickles, arrow heads of iron; rings, bangles, beads, knives, chisels, hooks, hoes, sickles, arrow heads of copper; bone objects such as, stylus, gamesmen; stone objects like saddle querns, pestles, dabbers; beads of semi-precious stones and terracotta; terracotta human and animal figurines; mother goddess types modelled in kaolin; and Satavahana potin coins and a hoard of thirty punch-marked coins, found in a miniature pot of black-and-red ware. However, the important discovery is of a sealing with a legend ....*sa Mahathalavarasa Vijasamikasa Siva Sadha,* written in late Satavahana Brahmi characters, inscribed in circle, embossed with a horse in the centre. On the reverse is a negative imprint of a five-stringed rope tied to a bamboo stick. Pottery recovered include black-and-red, red polished, black polished and dull red wares, represented by storage jars, globular vases, carinated deep bowls, *lotas,* lid-cum-bowls, miniature pots, dishes, etc.

8. EXPLORATION IN DISTRICT KRISHNA.—Dr T. V. G. Sastri of the South-eastern Circle of the Survey found Middle Palaeolithic tools, a ground stone axe of trap and pottery comprising Black-and-red and Rouletted Wares from the vicinity of the famous Buddhist site at Allur.

9. EXCAVATION AT SATANIKOTA, DISTRICT KURNOOL.—The Department of Archaeo logy and Museums, Government of Andhra Pradesh, conducted trial digging at the site.

The excavation yielded pottery including red ware represented by bowls with flared rim, storage jars, vases with constricted neck, and black-and-red ware dishes, etc., belonging to the Satavahana period.

10. EXCAVATION AT GOIXATHAGUDI, DISTRICT MAHBUBNAGAR.—In continuation of the last season's work (1973-74, p. 6), the Department of Archaeology and Museums, Government of Andhra Pradesh, continued excavation at the site with a view to: (i) expos ing completely the brick temples situated on southern flank of the Mound IV; and (ii) establishing chronological sequence of the temples.

Temple 1 consists of a *garbhagriha,* a pillared *mandapa* and an entrance porch on the east. Temple 2 had originally only a *garbhagriha* facing east and a pillared *mandapa* with entrance on the north. Subsequently, another *mandapa,* raised on stone plinth, was added on the eastern side of the earlier one, with entrance on the east. Later, flight of steps were provided to the second *mandapa.* Further, a chamber was constructed adjacent to the second *mandapa,* on the northern side, probably for housing temple property. However, a clear chronological sequence could not be established, and further work is necessary.

11. EXPLORATION IN DISTRICT NELLORE.—The Department of Archaeology and Museums, Government of Andhra Pradesh, conducted exploration in the District and brought to light a site yielding Lower and Middle Palaeolithic tools at Ambapuram, an Early Historical site at Inalapadu yielding red, black-and-red and red slipped wares, and an inscription dated A.D. 1578, of Vijayanagara period at Anantasagaram.

12. EXPLORATION IN DISTRICT PRAKASAM.—During the course of exploration, Shri B. Raja Rao of the South-eastern circle of the Survey discovered a Lower and Middle Palaeolithic site on the banks of an ancient Sagileru nullah. The tools, made on quartzite and showing patination, comprise Acheulian handaxes, predominently made of flakes, but a few retaining pebble cortex.

The Department of Archaeology and Museums, Govt. of Andhra Pradesh conducted exploration in the District and brought to light: a site yielding burnished grey ware and early historical pottery at Taticharla; a mound with exposed brick structures, probably a part of a *stupa;* a temple belonging to Kakatiya period at Racharla; a Chalukyan temple at Daddavada; and a temple of pre-Vijayanagara or Vijayanagara period at Dupadu.

13. EXCAVATION AT CHANDAVARAM, DISTRICT PRAKASAM.—In continuation of the last year's work (1973-74, p. 7), the Department of Archaeology and Museums, Government of Andhra Pradesh, excavated the site at Chandavaram.

The excavation revealed that the drum of the *mahastupa* had been expanded twice to bring it to the extant dimension by providing a circular wall around the existing one leaving in between a gap, filled with rubble packing and coursed brick work. Both the concentric walls were provided with grooves on the top for fixing limestone slabs carved with Buddhistic themes in Amaravati idiom. *Ayaka* platforms were provided to the *stupa* in the third phase of the construction. Flight of plastered steps leading up to a wall with railing, decorated with pilasters and encircling the *pradakshinapatha* of the *stupa* was exposed.

Excavation in Mound IA revealed monastic establishment with an apsidal structure, and that in Mound III exposed completely the wheel-shaped *stupa.*

The finds recovered from the excavation include: stone slabs carved with *stupa;* floral designs emanating from *harmika* and *puma-kumbha;* Naga Machilinda; Bodhi tree; and

devotees. The Rouletted Ware, dull-red and black wares, and lead coins with the symbols of horse and bull on the obverse constitute other finds.

ASSAM

14. EXCAVATION AT GAUHATI, DISTRICT GAUHATI.—The Department of Archaeology, University of Gauhati, conducted excavation at Gauhati, near Assam Engineering College, known as Dumar Jhar, wherefrom a boat-shaped terracotta object, measuring 2.50 m in length, 0.65 m in width and 0.33 m depth, was obtained. The stem end of the object is 50 cm. The helm of the object ends abruptly, unlike in other two examples which were exposed earlier, in which the helm ended in a narrow strip. Both sides of the object seem to have been connected internally by a bridge, the broken pieces of which were recovered from inside the object. Several such boats have been encountered in greater Gauhati on the southern bank of the river Brahmaputra, on the slopes between the hillocks and the marshy land. There is no evidence to establish either the relationship between these objects and the fishing community or their date. The excavated object is now housed in the Anthropology Department of the Gauhati University.

BIHAR

15. EXCAVATION AT ANTICHAK, DISTRICT BHAGALPUR.—In continuation of the last year's work (1973-74, pp.8-9), the Vikramshila Excavation Project, under Dr B. S. Verma, assisted by Sarvashri S. G. Saran, A. Mukherjee, Buddhi Singh and Tarun Kumar Shrivastava, resumed excavation with a view to locating the ancient Vikramshila *mahavihara.*

Altogether sixty trenches were laid out: (i) on the northern mound, outside the monastery complex, 100 m north of the northern gate; (ii) in the north-eastern comer of the monastery; and (iii) in the area between the central shrine and the northern gate in the inner courtyard of the monastery. Besides, a few more trenches were laid out to clear the debris to expose the north-eastern corner of the main shrine.

Excavation in the trenches on the northern mound exposed structures of three phases (pl. Ill A). The structures of the first phase appear to be contemporary with the early phase of the monastery. It was found that the bricks of the earlier phase had been reused in the structures of the later phase. The structures of the second phase, however, are represented by small shrines with a verandah and sometimes a platform. The walls of some of the structures are found to be decorated with niches and stone pedestals (pl. Ill B). The floors of the shrines are made of rammed *surkhi* and lime, probably plastered with a thin coat of red ochre. The third phase is represented by shoddy walls constructed of stone rubble and bricks, probably robbed from the nearby main monastery. Curiously enough a few Buddhist deities like Mahakala and goddess Tara (pi. IV B) were found to have been used as building material for the construction of the walls. A number of sculptures both of the Brahmanical and Buddhist deities were recovered from the excavation. The former include Mahishasuramardini, Chamunda, Uma-Mahesvara (pl. IV A), Vishnu, Seshasayi Vishnu, Manasa (pl. V C), Yama Ganesa (pi. V A) and Surya, while the latter consisted of mutilated Avalokitesvara (pi. V D), Maitreya, Shadakshari-Lokesvara (pl. VB), Simhanada-Lokesvara, Avalokitesvara, Bodhisattva-Padmapani and goddess Tara (pl. VI), Avalokitesvara, intricately-carved in black basalt, comparable to the one found at Somapura *mahavihara* and bronze image of Buddha (pl. VII A). Another interesting find was a corner-stone carved with two lions having one common head. Other notable finds

include: *stupas* of varying sizes in stone; door-sills; sculptures; door-jambs (pl. IV C); railings (pl. VIIB); pedestals; a small bronze figure of a pig with seven sucklings a trapeze-shaped hollow amulet gold-leaf, embossed with either a figure of some deity or floral motif, on the sides; a small lunate-shaped gold piece, weighing about 5 grams; a gold ring; a number of terracotta animal figurines (pl. VIII A, G and D); terracotta female figurines (pl. IX D) and miscellaneous terracotta objects, including a rattle (pl. VIIIB); three metal seals (pi. VIII E and F) and three silver coins.

Excavation in the north-eastern comer of the monastery exposed the main drain (80 cm wide and 90 cm high) of the monastery, built of stone slabs, and running below the flooring of the monastic cells. After 6-10 m it takes an angular turn to prevent the erosion of the corner and emerges outside the boundary wall. Important finds of the area include iron objects, stone beads and a few terracotta sealings (pl. IX A-C).

Excavation in the trenches between the central shrine and northern gate (pl. X) uneartheda disturbed pathway, connecting the two. It was found paved with flat bricks and probably plastered with rammed *surkhi* and lime.

16. EXCAVATION AT CHAMPA, DISTRICT BHAGALPUR.—The Department of Ancient Indian History and Archaeology, University of Patna, resumed the excavation at Champa for the fifth season. The work was directed jointly by Sarvashri B. Narayan and A. K. Singh, under the supervision of Prof. B. P. Sinha, and assisted by Sarvashri B. Kumar and S. K. Kaviraj, the objectives being: (i) to examine the deposit underlying the mud-rampart of Phase 1, in the trench CMP-IB; (ii) to ascertain the extent of the mud-rampart on the western end; and (iii) to expose the structural phases in CPM-IM where excavation had brought to light two parallel brick walls with a brick drain in between associated with the late Northern Black Polished Ware phase.

In addition to the water-logged trench CPM-IB, a new trench CPM-IK, measuring 5 x 4 m, was taken on the western side of CPM-IJ after leaving a baulk of 3 m. The trench CPM-IM, partly dug during 1972-73 season, was further extended by 2 m and 4 m on the eastern and western sides respectively. The digging at CMP-IB, where recourse had to be taken to pumping-set for draining out sub-soil water, revealed a 2-m deposit of dirty brownish and black soil, which in turn was found resting over the natural soil of yellowish hue mixed with ganget. The natural soil was dug up to a depth of 1.60 m beyond which digging was abandoned due to the gushing of sub-soil water. The overlying deposit above the natural soil yielded significantly a fairly large number of black-and-red ware sherds of coarse fabric. The pottery types include bowls and vases with flared rim, similar to the chalcolithic black-and-red ware from Sonepur and Chirand, and indicate the earliest occupational culture on this site prior to the N.B.P. Ware phase.

The excavation at CMP-IK revealed that the inner slope of the mud-rampart of Phase 2 did not continue. The lower levels, however, yielded N.B.P. Ware associated with a number of terracotta plaques of typical Sunga style and a few iron objects. Amongst the terracotta plaques, mention may be made of: a figurine of Sakti with *ayudhas* shown on the right side of the head; the feet, possibly of Lakshmi, standing on lotus petal; lotus design; and a bejewelled male figure. The occupational deposit of the Gupta period was found to overlie this stratum. The structural remains, ascribable to the Gupta period, include a brick wall, measuring 2.50 m long and 0.40 m broad, running north to south in the western section with seven extant courses of bricks, and another wall, measuring 1.70 m long and 0.30 m wide, running east to west in the north-western corner of the trench. The latter wall had two arms cutting at right angles; the eastern arm was 0'50 m long and 0.33 m

wide. In the north-eastern corner of the trench, yet another wall having only traces of it due to disturbance, was noticed near the eastern section. It runs east to west up to a distance of 0.90 m and then takes a turn to the north up to a distance of 1.40 m and runs into the western section. Associated finds of the period include: terracotta mould for making human heads; stone mould, bearing symbolic marks for making ear ornaments; stone beads; and an inscribed seal with perforation. Earlier excavation had yielded similar stone jewellery moulds (stone) belonging to the early N.B.P. Ware phase. Thus, it can be said that Champa continued to be a jewellery manufacturing centre down to the Gupta period. The digging at CMP-IM revealed three periods of construction ascribable mainly to the Middle and Late phases of the N.B.P. Ware and the post-Gupta period. The first period of construction is represented by a terracotta ring-well of 70 cm diameter of two courses, a brick well of 201 courses with 0·96 m diameter, and a brick wall of 13 courses running north to south. Associated finds with this phase included: the rim of a copper utensil; copper trinklet; stone weights; terracotta fox; iron dagger; stone and glass beads; bone arrowheads; and terracotta earlobes. The late N.B.P. Ware phase is represented by a brick wall of four courses, running north to south in the eastern section. The wall was 2.60 m long and 0'33 m wide with an offset of O.06m. The structure associated with this period at the western end is a wall running north to south. Antiquities of the late N.B.P. Ware phase included: terracotta pendant; stone and glass beads; terracotta spoon; terracotta plaques decorated with human and floral designs (pl. XI A); piece of crucible; bone arrowheads; and terracotta earlobes. The general characteristics of the N.B.P. Ware from the Middle and Late phases, however, remained unchanged. Antiquities associated with the Gupta level included: terracotta forehead (pl. XIB); ivory object (pl. XIG); stone and glass beads; terracotta horned animal; glass bangle; copper antimony rods; and iron nail. Antiquities and other finds from the post-Gupta levels include terracotta and stone beads and terracotta bracelets.

17. EXPLORATION IN DISTRICT BHOJPUR.—Shri Birendra Nath of the Mid-eastern Circle of the Survey, during the course of exploration discovered an ancient mound at Chausa on the bank of the river Karamnasa and collected sherds of the black-and-red and black wares.

18. EXPLORATION IN DISTRICT GAYA.—During the course of the exploration, Shri Birendra Nath of the Mid-eastern Circle of the Survey, discovered on the top of the Pretshila hills, near Gaya, a ruined temple and a number of sculptures, such as Ganesa, Siva and Parvati, standing Vishnu, Uma-Mahesvara, Buddha in *bhumisparsa mudra,* votive *stupa* and three stone pieces with inscriptions, probably in Pali language, on the Brahmajoni hills at Gaya. Further, he noticed several stone sculptures such as standing Vishnu, Karttikeya, Mahishasuramardini, Bodhisattva, votive *stupa* and two inscriptions in proto-Bengali script.

Shri P. K. Sharan of the Mid-eastern Circle of the Survey in the course of his exploration discovered an extensive urn-burial site at Dharawat. The site also yielded black-and-red ware and Northern Black Polished Ware in five fabrics. Besides, a number of stone sculptures, such as Surya, Uma-Mahesvara, Karttikeya, Vishnu and Ganesa were noticed. Buddha and Bodhisattvas, made of black stone, belonging to the early medieval period were also found at Bhanebigha, Dharanai Sumera, Dharawat, Kachanama, Korama, Ner, Suppi Chhatiana and Umata. The sculptures on the top of the hill at Baraber and Kanvadol were also re-examined.

Shri Naseem Akhtar of Gaya Museum, Department of Archaeology and Museums, Government of Bihar, in the course of his exploration, collected sherds of the chalcolithic black-and-red ware and black-slipped ware at Bodh Gaya. He also collected a few sherds of the N.B.P. Ware of fine fabric, associated with black-and-red ware at Jaugambari, near the Vishnupada temple in old Gaya.

19. EXPLORATION IN DISTRICT MADHUBANI.—During the course of his exploration, Shri B. S. Jha of the Mid-eastern Circle of the Survey, discovered a number of medieval sites along the banks of the rivers Kamala and Bachharaja. Besides, he noticed several sculptures, such as Vishnu, Ganesa, *ekdmukha* Siva *linga,* crowned Buddha belonging to late Pala period, at Berautpur, Jayanagar and Manpaur.

20. EXCAVATION AT BALIRAJGARH, DISTRICT MADHUBANI.—In continuation of the previous season's work (1972-73 p. 3), Dr Sita Ram Roy, assisted by Sarvashri Mohan Choudhary, Durganand Mishra (Sudha), Manzar Hasan, N. G. Ghosh, L. P. Singh and R. P. Singh, of the Department of Archaeology and Museums, Government of Bihar, resumed the excavation.

A 5-m square trench was laid out adjacent to the earlier one, and was excavated to a depth of 4.10 m. The natural soil, however, could not be reached due to high water-table Nevertheless, excavation revealed two periods of occupation, as noticed earlier.

Period I (second century B.C. to second century A.D.) is represented by a residential structure, being the continuation of the one encountered in the last season's work. It is associated with antiquities of the Sunga period, such as terracotta plaques (pl. XII A) with male and female figures, and terracotta animal figurines. Other important antiquities (pl. XIIB) of the period are terracotta wheels, fragments of terracotta toy-carts, copper antimony rods and iron nails, besides beads of various shapes and sizes made of semi-precious stones. The ceramic industry of the period is dominated by red ware represented by vases, troughs, spouted vessels, vases and pans with handle, perforated jars, lid-cum-bowls and lid-cum-vases with few specimens showing mat and reed impressions. Some of the troughs have rope-band design on shoulder. The roof-tiles show a circular hole in the centre and a deep groove on one side for securing the other side. On the evidence of a few sherds of the N.B.P. Ware and grey ware from the lowest levels, the period may be dated to the second century B.C.

Period II (second to sixth century A.D.) represented by a deposit of about 1.65 m, yielded terracotta animal figurines, stone beads, terracotta beads and balls. Besides, all the types and wares of Period I, except the N.B.P. Ware and grey ware, continued during this period.

21. EXCAVATION AT RAJGIR, DISTRICT NALANDA.—Shri Vijaya Kant Mishra, assisted by Sarvashri P. K. Sharan and A. N. Roy, of the Mid-eastern Circle of the Survey, excavated the site proposed for the construction of the temple of the Swetamber Jains, to the east of the New Fort and adjacent to the Dormitory at Rajgir and brought to light three cultural periods.

The excavation revealed at the exposed lowest level of Period I (third-second century B.C.), a rubble stone wall, measuring 1.78x0.36 m, showing evidences of firing and a rammed floor of two phases, overlain by a cairn-circle, oval in plan, made of rubbles of small to medium size, 5'50 m in diameter. The maximum extant width of the cairn-wall is 44 cm. The cairn-circle enclosed a damaged urn-burial. The urn is of dull red ware of

medium fabric and contained loose greyish soil mixed with ash and charcoal. Other material found in the urn included a few charred bone pieces, a bead of banded agate and an uninscribed rectangular cast coin. The associated finds outside the urn included terracotta objects, terracotta and stone beads, bone pins of various sizes, iron nails and knife and a few N.B.P. Ware sherds.

Period II (second-first century B.C.) is characterized by the occurrence of a terracotta ring-well and two rubble walls of 4·25 x 0.44 m and 3·22 x 0.36 m respectively. The ceramic industry of the period is represented by red ware of medium to coarse fabric, coarse-grained dull red ware and red ware with deep red slip. The usual types are bowls of various sizes, lipped bowl, knob, vase, spouted vessels, dish, *handi,* basin, etc. The notable antiquities are copper cast coins, terracotta head of snake, bone pins of various sizes, terracotta and stone beads, iron nails, knives, etc.

Period III (first century A.D.) is represented by diverse burial practices. The burials, hitherto unknown in the region, are post-cremation and consist of: (i) cist burial; (ii) urn-cum-pit burial; (iii) pit-burial; and (iv) double urn-burial. The material unearthed from these burials included terracotta animal figurines, cast copper coins and bone pieces, besides the ceramic industry represented by red ware of medium to coarse fabric. The notable types are miniature jars, flat-based bowls, cups, incurved bowls, perforated cylindrical jars, etc.

22. EXPLORATION IN DISTRICT VAISHALI.—During the course of his exploration, Shri D. P. Sinha of the Mid-eastern Circle of the Survey, discovered a number of ancient sites at Balandpur (Narainpur Buzurg), Basarh, Fatehpur Buzurg (Matia), Fatehpur-Ram (Musridin), Hassanpur Bhadwar, Imadpur (Juridih), Kanhauli Dhanraj, Karihan, Panapur Batesar, Raghuasoi, Sheikhopur and Sherpur, on the dried bed, probably of a wide canal, cut through the region in ancient times for navigation, etc., and collected black-and-red ware associated with red ware, black-slipped grey ware, black ware and N.B.P. Ware.

GUJARAT

23. EXPLORATION IN DISTRICTS AHMADABAD, BHARUCH, BHAVNAGAR, GANDHINAGAR, KHEDA, SURENDRANAGAR AND VALSAD.—The Department of Archaeology, Government of Gujarat, in the course of exploration in the above mentioned Districts, located the following sites. *(ESA=Early Stone Age; MSA=Middle Stone Age; LSA=Late Stone Age;* and *H=Historical.)*

District	*Taluk*	*Village/Site*	*Cultural assemblage*
Ahmadabad	Ahmadabad city	Sarkhej	ESA
-do-	Daskroi	Miroli	LSA
-do-	-do-	Pirana	-do-
-do-	Dehegam	Devkaran Muvada	H
-do-	-do-	Moti Pavthi	ESA, LSA
-do-	-do-	Pathadia	H
-do-	-do-	Pathodara	LSA
-do-	-do-	Vasana	-do-
Bharuch	Nandod	Hajarpar	H

District	Taluk	Village/Site	Cultural assemblage
Bhavnagar	Umrala	Rajpipla	ESA
-do-	-do-	Tarpada	-do-
-do-	-do-	Umrala	-do-
Gandhinagar	Gandhinagar	Palej	LSA
-do-	-do-	Pethapur	-do-
Kheda	Kapadwanj	Ambaliara	LSA
-do-	-do-	Kapadwanj	MSA
-do-	-do-	Nani	-do-
-do-	-do-	Ratnakar	-do-
-do-	-do-	Sonada	LSA
Surendranagar	Chotila	Chotila	MSA
Valsad	Chikhli	Suthavad	MSA

24. EXPLORATION IN DISTRICTS BANAS KANTHA, KAIRA AND PANCH MAHALS.—Exploration by the Department of Archaeology and Ancient History of the M.S. University of Baroda, in the region around Champaner brought to light sites yielding Chinese blue and white porcelain dishes, Celadon Ware, copper vessels, bottles of brass, tin and lead foils and other objects.

25. EXPLORATION IN DISTRICT JUNAGADH.—Shri A. R. Marathe and Dr S. N. Rajaguru of the Deccan College Post-graduate and Research Institute, Pune, explored the valleys of Hiran and Shingoda. Shri Marathe collected a few Lower Palaeolithic tools in a stratified context in the cut-off trench of the dam site at Umrethi, about 23 km north of Veraval. He also located several Lower and Middle Palaeolithic workshop sites on the slopes of Sasan Gir. The tools are made on locally available rocks like basalt, dolerite, chert and chalcedony.

The detailed field study by Shri A. R. Marathe and Dr S. N. Rajaguru, of the Miliolite formation in relation to the Cretaceous-Eocene Deccan Traps and to the Late Neogene Coastal and continental formations brings out the following important aspects of the Quaternary history of the Hiran valley.

1. The basal fluvial channel gravels and overbank flood silts occur unconformably either on the Deccan Traps or on the Gaj beds of Miocene age. Lower Palaeolithic tools (pl. XIII A) occur in the buried channel gravel (35 m below the surface) at Umrethi. This buried course of the Hiran was graded to sea level 15 m below the present one.

2. The basal fluvial deposits are overlain by the Miliolite formation (I) of littoral to sub-littoral origin. It is about 25 m thick and occurs about 40 m inland from the coast and 80 m above Mean Sea Level.

3. The present streams have cut their shallow valleys in the Miliolite formation (I) and deposited channel gravels and overbank silts on or against the Miliolite. The lower fluvial deposits, particularly silts, are strongly oxidized. A few Lower Palaeolithic and a large number of Middle Palaeolithic tools have been found in association with these fluvial deposits.

4. The fluvial deposits are disconformably overlain by the Miliolite formation (II) about 3 m thick, by dead oyster beds, and beach gravels. The Miliolite (II) occurs up to 30 km inland from the coast and the dead oysters and beach gravels occur 8 to 10 km inland

and 6 m above the Mean Sea Level. Only at one place, i.e. Prabhas Patan, the oyster bed has been dated to about 21,000 years B.P.

5. These sub-littoral formations are unconformably overlain by fluvial deposits, 2 to 5 m thick. The top surface of these deposits forms a depositional terrace surface over which Late Harappan habitational mounds occur at a few places.

6. In a region, quite close to the coast, sub-recent alluvial, coastal dunes and beach rocks are found to occur in disconformable relationship with earlier formations.

These geomorphic observations indicate that the Early Man arrived in the Hiran valley almost at the beginning of the Quaternary period. He witnessed several changes in the relationship of land and sea during this period. Even though the exact dating of the stone tools found at Umrethi is not possible at this stage, the geomorphic evidence indicated that these are one of the earliest tools found so far in western India.

26. EXPLORATION IN DISTRICT KAIRA.—During the course of his exploration, Shri K. N. Momin of the Department of Archaeology and Ancient History of the M. S. University of Baroda, discovered a number of sites belonging to the Harappan culture at Changda, Khanpur, Vadgam Kanewal and Valotur in Cambay Taluk and Nar in Petalad Taluk.

Amongst these sites, Vadgam Kanewal (pl. XIII B) is the largest settlement, measuring 300x100 m with a cultural deposit of 2.50 m. Pottery collected from the site included plain and painted red ware, buff ware, crude incised black ware and crude incised red ware. The types are dish-on-stand, coarse and carinated plain and painted bowls, stud handle bowls, pedestalled bowls, goblets, basins, *lotas,* high-necked vases, vases of different sizes and storage jars of different sizes. The pottery has strong affinities with materials from Lothal A and B and Rangpur II A, IIB and IIG periods. Besides pottery, terracotta triangular cakes and sling balls were also collected. The study of the bones collected indicates the existence of rhinoceros, neelgai, deer and other groups of animals.

The site at Nar, with a deposit of 2.50 m, indicates an early historical settlement, represented by crude black and red and mica wares, overlying the Harappan occupation.

A number of microlithic or Late Stone Age sites were also discovered during the exploration of the region.

27. EXPLORATION IN DISTRICT PANCH MAHALS.—During the course of his exploration, Shri V. H. Sonawane of the Department of Archaeology and Ancient History, M. S. University of Baroda, discovered a number of Late Stone Age settlements in rock-shelters in the vicinity of Tarsang village in Shehra Taluk of the District.

One of the rock-shelters, situated on the northern face of the Maheshvari hill, is about 14 m long and 5 m broad. On the ceiling of the shelter, traces of paintings in red colour are visible. Microlithic tools such as scrapers, lunates, blades, cores and waste flakes were collected from the shelter. Besides, one chopper, two handaxes, one round scraper, one broken unfinished ring-stone and one grinding stone with fine deep grooves were found on the western slope of the hill.

On the southern side of the Maheshvari hill two more rock-shelters were located. In one of these shelters, paintings in red colour are seen on the ceiling. The painted motifs consist of concentric circles joined by lines and filled triangles.

Another rock-shelter, situated on the north-eastern side of Tarsang, also showed traces of paintings and yielded microlithic tools. The fifth rock-shelter, found between the

villages Tarsang and Rena, in a small granite hillock, yielded microlithic tools, cores and flakes.

27. EXCAVATION AT CHAMPANER, DISTRICT PANCH MAHALS.—The Department of Archaeology and Ancient History of the M. S. University of Baroda resumed *(1973-74),* excavation at Champaner, with a view to understanding the life-pattern of the affluent section of the society in the fifteenth-sixteenth century A.D.

The excavation in the area, marked by compound walls, revealed the existence of residential blocks, gardens, tank, stables, water channels, etc., showing five structural phases. The occupation of the area seems to cover a century or so within which the material culture was found to have remained the same. The details of the structures are as follows.

Residential Area.—The area had four types of residential structures: (i) structure with lime-concreted courtyard around it; (ii) structure with courtyard in front of it; (iii) structures built around central courtyard; and (iv) structures at the place which was used for different purpose earlier. Only one structure of type (i), having twelve rooms, six on ground-floor and six on the first floor was exposed. Of type (ii) many structures were encountered. Often the lime-concreted courtyard in front had basins for plants. A sub-type in this variety had no lime-concrete flooring in the courtyard. This is a very late development in the area. Of type (iii) houses, the central courtyard with lime concrete had units of single room, two rooms or three rooms around it. This type is found outside the innermost compound and is possibly intended for servants. Type (iv) houses have two sub-types, (a) structure with courtyard in front of it and (b) a single room unit with a part of earlier walls and a part of newly-constructed walls. This sub-type did not have lime-concreted courtyard. Stratigraphically and structurally they represent the last phase of occupation.

Garden Complex.—The garden complex was near the residential areas. They are of two distinct types: (i) a small garden in front of the house (pl. XIV A); and (ii) a large complex near the house. The former type is divisible into two sub-types: (a) rectangular or square concrete flooring with space for plant basins; and (b) the plant basins running parallel to the main wall. In the former sub-type, water was supplied through sub-channels. Such gardens are laid either at the entrance or in front of the house. The largest garden of this sub-type has ten plants and the smallest has only two. Stratigraphically and architecturally this is the earlier type. In the second sub-type, the area between the main wall and the plant basins has flooring laid in lime concrete. The watering of the plants was probably made by manual labour. This sub-type is a later development on the site. The large garden complex of type (ii) is also divisible into two sub-types: (a) having running water-channels on aqueducts, rectangular *hauz* and many sub-channels, with the area for plants on one side of the garden; and (b) a central lime-concrete flooring, with octagonal canopied *hauz* and water channels on aqueducts and the space for plants all round. The water channel near the *hauz* was constructed in volutes, in which inlets and outlets were different, for producing whirlpool effect (pl. XV A).

Hauz.—Three types of *hauzes were* exposed: (i) square *hauz* with three steps on all sides and a flat bottom; (ii) rectangular *hauz* with flat bottom and a small square pit on one side which was later filled up and its floor painted with a border of red and yellow checks and a decorated medallion; and (iii) octagonal *hauz* having two sub-types: (a) with steps on four sides and bottom in two stages, of which the lower one having a small square pit (pl. XV B); and (b) having octagonal sides sloping towards the bottom to form a bowl-shaped narrow bottom with two sides having narrow steps flushed with the slope.

Tanks.—They are of two types: (i) small rectangular tank for storing water; and (ii) large rectangular tank with limestone slabs and limestone pillars fixed in the floor. This was probably for animals.

Water drains.—The main drain in the residential area runs north to south and the sub-drains on the periphery of the area join the main one at right angle (pl. XIV B). The water from inside the rooms was drained out from a hole, provided in the walls, to small drains which spilled water either inside the compound or outside it. The rain-water drains are open channels usually outside the house or at the end of the courtyard.

Soak pits.—They are of two types: (i) ring-well with four rings built near the southern garden; and (ii) jars of two sub-types; (a) a small cylindrical jar placed in the ground outside the house to collect water coming from the house; and (b) large inverted jar fixed in the ground and connected with water place.

Latrines.—They are broad U-shaped small structures in a series with small platforms in between the rows to keep water jars. They are found invariably near the water drains. They are either built by the side of the house or in a comer of the garden.

Stable.—A large stable with small sandstone pillars fixed to stone bases by mortise and tenon joint technique was exposed in a rectangular structure built of brick, stone and rubbles. Horse droppings were collected from the black clay flooring.

The ceramic industry of the period is dominated by plain and burnished, sometimes decorated, red and black wares and handmade jars. The shapes are mostly utilitarian. The table ware is represented by neatly-made and well-polished small *lotas* and bowls with stand besides glazed pottery. Water pots for hen and birds are noteworthy. A glazed ware showing a white sandy friable fabric looks almost like an imitation of porcelain ware. Imported pottery is represented by Chinese porcelain and Celadon Wares.

Terracotta objects are represented by pallets, horses, elephants, tigers, etc. Besides, specially made lamp-trees, lamp-finials, etc., are noteworthy. Stone objects include rotary querns, flat querns, boat-shaped *khals,* etc., and carnelian rings with signets, beads, balls and pallets. Iron objects consist of nails, swivels, chains, lamps, pans, arrowheads, caltrops, and copper rings, chains, antimony rods, coins, etc. Only one object of silver viz., a ring was recovered.

29. EXCAVATION AT KARVAN, DISTRICT VADODARA.—Shri W. H. Siddiqi, assisted by Sarvashri S. Ananda Sastry and N. M. Ganam, of the Western Circle of the Survey, excavated the site Karvan or Kayavarohana, with a view to ascertaining the cultural sequence of the site, which is associated with Lakulisa, the founder of Pasupata School of Saivism.

The excavation in the southern part of the mound revealed a series of rectangular or square box-like brick structures, filled with rammed earth and brick-bats. The structures showed four structural phases. The structures of Phase 4 were found to be built with bricks of earlier phases. The bricks generally measured between 39 to 43 cm in length, 26 to 28 cm in breadth and 7 to 8 cm in thickness. The size of the bricks was larger in the lower levels. The structure was probably used for religious purposes.

The digging in the central part of the mound exposed a wall (pl. XVI A) built of well-modelled and neatly-cut bricks with mouldings closely resembling the bricks used in the construction of the *stupa* at Devnimori. The wall, provided with a 2.20 m wide entrance gateway which was closed at a later stage (pl. XVI B), enclosed a group of structures, now only partly exposed. This wall, with bricks of 35x23x6 cm and 36x24x6 cm, overlies an earlier wall with bricks of size of 41 x 25 x 7 cm built clumsily on the natural soil

(pl. XVII A). A brick-laid central quadrangle with soakage jars and drain was also exposed (pl. XVII B).

Among the ceramics, mention may be made of an ill-fired red ware with a reddish creamy surface having impressions of a series of stylized swans of pre-Gupta period, which later became an oft-repeated symbol in the sculptural art of the early medieval period. Important antiquities recovered in the excavation are iron nails and bolts, copper coins of the Kshatrapa and Maitraka periods, tribal coins, a spherical gold bead, a ring with ruby set in the centre and small diamonds on either sides (pl. XVIII A) and terracotta beads, mostly of areca-nut shape and bullae (pl. XVIII B). A unique find is a four-armed Vishnu in terracotta, obtained from a layer ascribable to the fourth century A.D. The peculiar head-gear which is in its incipient stage of *kirita* strongly resembles an Iranian or Central Asian cap. A similar one in yellow schist (pl. XVIII C), though badly weathered, was also recovered from the same layer.

HARYANA

30. EXCAVATION AT RAJA KARNA-KA-QILA, DISTRICT KURUKSHETRA.—In continuation of the last year's work *{1973-74),* the Department of Ancient Indian History, Culture and Archaeology of the Kurukshetra University, under the direction of Dr U. V. Singh, assisted by Drs Silak Ram, S. B. Singh, S. P. Shukla and Shri G. B. Sharma, resumed excavation at Raja Karna-Ka-Qila.

The excavation in the year under review was confined to the low and small mound located at a distance of about 200 m to the east of the main mound which was excavated last year. Six squares, measuring 6 x 6 m, were subjected to horizontal excavation with a view to ascertaining the nature of the protohistoric habitation.

The protohistoric habitation, belonging to the late phase of the Harappa culture, was found to begin right on the top of the natural soil and was 1 m to 1.50 m in thickness. A structural complex of mud-brick walls consisting of two rooms were exposed. Afire-place, refuse pit, an oven and a corn bin were encountered in the bigger room. The smaller room is almost square in plan with a small entrance on the south-east. Two structural phases were noticed. The bricks used in the structures are of the size 40 x 20 x 10 cm.

Noteworthy finds of the period included: a large number of beads of agate, crystal, faience, jasper, steatite and carnelian; a beautiful figurine of a stag in faience with a horizontal hole probably for use as a pendant; a large number of faience and terracotta bangles; and circular and triangular cakes. Besides, a complete spearhead of copper without mid-rib was also found.

The pottery of the period is characteristic of the late phase of the Harappan culture. Some of the typical mature Harappan shapes, such as perforated jars and beakers, are conspicuous by their absence. The goblet, too, seems to be very rare being represented by only three pieces of bases.

HIMACHAL PRADESH

31. EXPLORATION IN DISTRICT KANGRA.—In the course of his exploration, Shri R. P. Sharma of the North-western Circle of the Survey, discovered a late medieval *garhi* belonging to Pathania Rajputs and containing paintings of the Kangra School, comprising *Raga* and *Raginis* and scenes from *Ramayana* and Krishna-lila at Damtal near Pathankot. The paintings belong to the nineteenth century A.D.

32. EXPLORATION IN DISTRICT NAHAN.—In the course of his exploration Shri R. P. Sharma of the North-western Circle of the Survey, discovered an early medieval site at Mirpur Kotla, 8 km from Amb, on the Nahan-Chandigarh road. The site yielded Siva *lingas,* Nandi and structural remains, like door-jamb and lintels, all belonging to *circa* A.D. 900

KARNATAKA

33. EXCAVATION AT VADAGAON-MADHAVAPUR, DISTRICT BELGAUM.—In continuation of the last year's work *(1973-74,* pp. 16-17), excavation was resumed by the Departments of Kannada Research Institute and Ancient Indian History and Epigraphy of the Karnataka University, Dharwar, under the direction of Dr A. Sundara.

In Site 2, a trench measuring 9 x 9 m was laid on the eastern side of the brick structure exposed last year, with a view to tracing out the eastern extension of the structure. The digging to a depth of 2 m yielded three layers, assignable to the late Satavahana period, distinguished on the basis of red ware in profusion, black-and-red ware, two potin coins and three beads of lapis-lazuli, carnelian and glass.

In Site 1, where a baked-brick wall of two courses was exposed in a trench, an area measuring 45 x 10 m was subjected to further digging with a view to exposing the complete structure. The excavation revealed a wall of two phases built with reused bricks, running 33 m east-west and slightly curved wall of single brick-width projecting from its northern face. This later wall, encompassing a large area, is the biggest among the ones so far exposed. The structures may be dated to the first three centuries of the Christian era as they are found in the topmost layers along with the Satavahana coins.

Noteworthy antiquities, besides pottery and beads of usual types, comprise: potin coins of bow and arrow type; a terracotta figurine of a standing man with right hand probably in *abhqya-mudra* and upper garment running over the left shoulder comparable to standing Buddha; and another similar figurine but with *yajnopavita.*

34. EXPLORATION IN DISTRICTS BELGAUM, BIJAPUR, DHARWAR, NORTH KANARA, RAICHUR AND SHIMOGA.—During the course of his exploration, Dr A. Sundara of the Ancient Indian History and Epigraphy of the Karnataka University, Dharwar, discovered a neolithic habitaion site yielding ashy and burnished grey ware pottery at Hale Nagara in Hosanagara Taluk, District Shimoga, an early historical site and a megahthic burial site with dislocated port-holed chamber at Halshi in Khanapur Taluk, District Belgaum, early historical sites at Balligave in Shikaripura Taluk, District Shimoga, and Badami (area around the inscription of Pulakesin I) in District Bijapur, rock-paintings at Sureban in District Dharwar, and Badami.

Noteworthy among the temples and sculptures noticed and studied are: (i) the ruined Siva temple of early Kadamba period with original *Siva-linga* and a sculpture of two-armed Ganesa at Niralagi in Shikaripura Taluk; (ii) pre-medieval Adi Dharesvara temple at Dhareshvara in District North Kanara; (in) lamp-pillar with *kubja* Yaksha, carrying lamp on the head, at the top and a panel of standing Buddha and his disciples in the middle of the pillar, probably of second-third century at Togarsi in Shikaripura Taluk; (iv) two images of standing Buddha in round relief of *circa* second-third century A.D. and another sculpture of Surya at Haigunda, and Marhishasuramardini of fifth-sixth century A.D. at Hinnur, both in Honavar Taluk, District North Kanara; and (y) sculptures of bison's head without stretched tongue, of fourth-fifth century A.D., probably meant for

keeping in front of Mahishasuramardini sculptures at Kuppagadde, Kuppatur in Shikaripura Taluk, District Shimoga.

Further, he noticed an inscription of sixth century A.D. painted in red ochre, mentioning some names, such as Sri Angaran Santereyan, etc., in four lines, in a rock-shelter near Palki Gundu in Koppala Taluk, District Raichur, besides, two sets of copper-plates each consisting of three plates with a ring bearing the seal of Varaha, one being of Kalyana Chalukya Vikramaditya VI and the other of later medieval period, mentioning traditional Janamejaya of Hastinapura as the donor, both in Nagari script and Sanskrit language from Jamboor in Shikaripura Taluk, District Shimoga.

Under the guidance of Dr A. Sundara, Shri Lakshmikanta Rao brought to light rock-bruisings and paintings of human, animal figures and of geometrical designs at Billamarayana Gudda, near Lingsugur and Indurgi, in District Raichur.

35. EXPLORATION IN DISTRICT BIJAPUR.—Drs S. N. Rajaguru and R. S. Pappu of the Deccan College Post-graduate and Research Institute, Pune, studied the geomorphology of Acheulian-surface and stratified sites around Anagwadi and Mudhol in the Ghataprabha valley. The field investigations included the study of slopes, valley forms, laterites, high-level channel gravels, colluviums and overbank flood silts and sands. These preliminary studies show that the Acheulian Man occupied the lateritized slopes and the older channel, about \ km away from the present channel of the Ghataprabha. The channel of the Ghataprabha, during Acheulian occupation, was at least 3 to 5 m higher than the present bed level and was possibly a braided one. Relative thinness of the Pleistocene surface sediments and the occurrence of fresh stone tools in various geomorphic situations indicate that the landscape in the Ghataprabha valley has remained fairly static since late Pleistocene times. Further laboratory studies and field investigations would help to reconstruct the ecology of Acheulian habitat in the Ghataprabha valley on scientific data.

36. EXPLORATION IN DISTRICTS BIJAPUR, GULBARGA AND SHIMOGA.—The Department of Archaeology and Museums, Karnataka, explored the submergence area of Almatti reservoir in District Bijapur. Fluted cores of chalcedony and chert were collected at Sindgi, in Bagalkot Taluk. Early Historical sites characterized by black-and-red ware and red ware were located at Kesnur and Kirsur in Bagalkot Taluk.

Explorations along the Bhima brought to light twenty-two early historical sites at Chandapur, Hannur, Hire Nandur, Lambadi Tanda in Afzalpur Taluk, Diggaon and Mogla Hal in Chitapur Taluk, Devargonal, Devapur and Hagarti in Shorapur Taluk, Alhalli, Hanganahalli Hal, Hanumanahalli, Udigihal and Ranjol in Sedam Taluk, Bolewad, Gottam Gutta (Viratnagar), Gundagurti, Kalla Benur, Mahagaon, Matti Madu Hal, Mukta and Srinivas Saradgi, all in District Gulbarga. The sites yielded black-and-red ware, Russet-coated Painted Ware and red-slipped ware. Chandapur yielded, besides pottery, fragments of terracotta figurines, comparable to Sannati finds of *circa* first century A.D. At Devargonal, remains of furnaces for manufacturing beads were noticed. Among all the sites, Gottam Gutta is an extensive mound resembling Banavasi in its configuration. Besides, neolithic sites yielding characteristic grey ware and polished stone-axes were noticed at Anaveri and Nagasamudra in Bhadravati Taluk, District Shimoga.

37. EXPLORATION IN DISTRICT GULBARGA.—During the course of his exploration, Dr B. K. Gururaja Rao of the Department of Ancient Indian History and Epigraphy of the Karnataka University, Dharwar, discovered a number of ancient sites in the district.

The mound at Kollur on the Nalawar-Sannati road measures 200 m east-west, 150 m north-south and nearly 1.50 m in height. The site yielded ill-fired crude red ware. A medieval temple and a number of old Kannada inscriptions were also noticed.

At Halkatti on the Wadi-Nalawar road and at Gurmitkal in Yadgir Taluk, mud-forts, probably of medieval times, were noticed. A few medieval Kannada inscriptions were also found at the former site.

Near Yadgir, it was observed that the well-developed terraces on the banks of the river Bhima have a prolific Middle Stone Age industry. The river section just above and below the road bridge near the railway line, revealed that an implementiferous fine gravel bed is capped by a thick deposit of dark clay, the lower part of which is also implementiferous. The latter deposit is overlain by silt deposit, probably of recent origin. A thin deposit of pure sandy layer was seen at some places at the junction of the gravel bed and the clayey deposit.

The tool-types found in the locality include a variety of scrapers, borers and points, besides used flakes. Waste flakes are found in majority while cores and discoids are very few. Some of the tools are of composite nature, types being scraper-cum-points or scraper-cum-borers. A few small-sized Acheulian type of handaxes and cores were also found. The material used for the tool making is jasper, crystal and agate and occassionally quartzite.

38. EXCAVATION AT HUNSGI, DISTRICT GULBAROA.—Dr K. Paddayya of the Deccan College Post-graduate and Research Institute, Pune, conducted excavation at Hunsgi in Shorapur Taluk, where Public Works Department had dug a number of trenches in connexion with the construction of a minor irrigation dam, exposing a gravel deposit yielding Acheulian tools. Altogether five Acheulian localities were identified lying 100 to 350 m away from one another. With a view to identifying the occupational horizons, excavation was conducted in Locality V, which is about one hectare in extent, and forms a distinct terrace rising to a height of 5 m from the stream-bed; water does not reach this level even during floods.

The whole area is dotted with granite boulders which actually form part of a ridge, cutting across the stream in southeast-northwest direction. The vegetation consists of low grasses and thorny scrub forest of species like *Acacias* and *Zizvphus,* characteristic of the semi-arid climate. At the time of Acheulian occupation, the drainage was not yet fully organized and was in the form of braided channels flowing at a higher level and in a much broader system. It is possible that a portion of the present terrace formed part of this channel system. It is underlain by bedrock (granite), with crevices filled up with sterile granite detritus. In addition to the numerous smaller pieces ranging between 5 and 30 cm, more than half a dozen granite boulders (50 cm to 1 m across) were exposed in the trench. Considering these in relation to the ones lying outside the trench, especially on its northern side, an oval-shaped area with its periphery defined by granite boulders was exposed. Three advantages seem to have favoured the selection of this area for occupation by the Acheulian groups": first, its river side location would ensure easy and adequate supply of water; second, the granite boulders marking out the area would already give protection from wind; and third, the limestone pebbles scattered over the locality would serve as the raw material for tool-making.

The floor (pl. XIX A) yielded over three hundred stone artifacts. As in the case of assemblages from other sites in the *doab,* limestone is the principal raw material employed by the occupants of this site. Lack of any preferred orientation in the position of pebbles

and artifacts, the sharp nature of the edges of artifacts, the preponderance of waste products over finished tools, and the occurrence of limestone and granite pieces with battered surface (obviously used as hammer stones) prove that manufacturing of tools was carried out on the spot itself. Cleavers and handaxes are two major types among the artifacts, other types being picks, points, scrapers and backed knives. On the whole, the assemblage compares favourably, both technologically and typologically, with those from other sites in the area.

Proceeding from the clues given by the surface clusters of artifacts, several trial trenches were dug at different points. These proved to be disappointing in that they either exposed bedrock immediately below black soil (30 to 40 cm) or revealed 30 cm to 1 m thick soft gravel (very similar to that found in Trench 1 at Locality III excavated earlier). This gravel deposit contained only scattered artifacts without any traces of regular occupation. However, one of the trial trenches (1 x 1 m), lying 45 m away from the stream bank and 4 m above the water level, gave entirely different results. Here, below 70 cm thick soft gravel, a concentration of artifacts was encountered. In order to ascertain whether this was just a stray phenomenon or forms part of an occupation level the pit was extended to cover an area of 22.75 sq m which revealed the continuation of the concentration of artifacts.

The thickness of the floor ranges between 20 and 25 cm and consists of sub-angular pebbles and cobbles as well as rubble of limestone and granite blocks of various sizes, all set in a matrix of whitish material derived mainly from the *in situ* weathering of granite. Unlike the loose overlying gravel, this deposit is extremely hard to dig even with a hard pick, frequently calling for the use of chisels. While the pebbles and cobbles of limestone form part of a thin gravel-spread, laid down over the locality by the ancient stream prior to the arrival of man, the angular blocks of this rock were undoubtedly brought to the site by man from the plateaux which are within a distance of 2 or 3 km. The matrix material of the floor is alkaline and as such quite suitable for the preservation of organic remains.

39. EXPLORATION IN DISTRICT KOLAR.—During the course of his exploration, Shri C. Krishnamurthy of the Southern Circle of the Survey, discovered a neolithic factory site at Gangasandra in Malur Taluk, and observed that the material used for the tool-making is dolerite.

40.

The megalithic port-holed cist-circles were also noticed by him at Halahalli, Krishnapura, Mulakanahalli, Somasettihalli and Venkatapura in Malur Taluk, as also sites yielding early historical pottery at Budihalli and Halepalya.

40. EXCAVATION AT MUTTALAVADI, DISTRICT MYSORE.—The Department of Archaeology and Museums, Government of Kamataka, conducted a small-scale excavation at Muttalavadi located on the left bank of the river Kaveri.

The excavation revealed that the earliest occupation of the site was by the neolithic people who settled on the wind blown sand deposit above the natural soil. The antiquities from this strata, besides handmade burnished grey ware, consist of ground stone axes, axe-hammers and a shell bead. Although no 'complete head-rest was found in the excavation, fragments of it were collected from the surface. The excavation indicated that the Upper Kaveri valley was occupied only during the later phase of the Neolithic period, as attested to earlier at T. Narasipur and Hemmige. This period is tentatively dated to about 1600 B.C.

The Iron Age is represented in the upper level, and is characterized by the occurrence of the Black-and-red Ware. After the Megalithic culture, the site was reoccupied only during the nineteenth century.

KERALA

41. EXPLORATION IN DISTRICT KOZHIKODE.—During the course of his exploration, Shri Chandrasekhara Menon of the Southern Circle of the Survey discovered megalithic rock-cut caves, both rectangular and square types covered by capstones, at Kokallur, Kozhikollur, Muthurnacha, Unnikulam and Velur. Topikal was also noticed at the last-mentioned village.

A number of medieval sculptures were noticed at Chirakkara, Vishnu temple at Muthuvannacha and at Siva temple at Kozhikollur and Payyoli, besides some mural paintings at Payyoli and Viyyur.

42. EXCAVATION AT MACHAD AND PAZHAYANNUR, DISTRICT TRICHUR.—Shri K. M. George, under the supervision of Prof. R. N. Mehta of the Department of Archaeology of the M. S. University, Baroda, excavated two transepted cist-circles with antechamber and urn-burials at Machad and Pazhayannur.

The excavation revealed that the diameter of the stone-circles, enclosing the transepted cists at Machad (pl. XIX B) and Pazhayannur, measured 9 m and 5 m externally and 8.50 m and 3·50 m internally. The cists are found to be north-south oriented with the antechamber built of smaller slabs projecting from the eastern orthostat. A port-hole of 28 cm in diameter is provided in the eastern orthostat, connecting the main chamber with the antechamber. The orthostats have an average length of 2 m and a height of 2.50 m. The cist is divided into two halves by a vertical slab. In the southern half, a bench-slab resting over two upright slabs which divide the half into three cells, was noticed. It was observed that the majority of the antiquities, such as pottery, iron objects and beads were kept on the floor slab at the bottom in three cells. Cist at Pazhayannur had the cap-stone, but of the one at Machad was missing.

The urn-burial at Machad was covered by a huge granite capstone and was enclosed by a stone-circle of 2.60 m in diameter. The mouth of the urn was covered by a small slab on which a small pot was resting. The urn was buried in a circular pit.

The pottery recovered from these burials is represented by Black-and-red Ware, red ware and black ware. The other finds include: iron objects, such as four chisels, two daggers, two hooks, two nails and one hundred and seventy-nine beads, of which hundred and twenty-one are of etched variety. The beads are made of agate, carnelian, felspar, jasper and crystal, the shapes being barrel-cylindrical, oblate, tabular, spherical, rectangular bicones and some being faceted.

MADHYA PRADESH

43. EXCAVATION AT MALHAR, DISTRICT BILASPUR.—The Department of Ancient Indian History, Culture and Archaeology of the Sagar University, under the direction of Prof. K. D. Bajpai, assisted by Dr S. K. Pandey and Shri V. D. Jha, excavated the ancient site at Malhar which was once a flourishing township on the ancient route from Kausambi to the south-eastern coast. The excavation revealed the following cultural sequence.

Period I, datable from *circa* 400 B.C. to A.D. 200, is represented by two structural

phases. The first phase is characterized by houses built of stone slabs. Locally available white stone has been used for the foundations and the construction of walls. The second phase is characterized by the use of baked bricks for the construction of the structures. The foundations were filled with gravels and black soil.

The ceramic industry of the period is represented by the black-and-red and plain red wares. The prominent types in black-and-red ware are dishes and bowls while the red ware is represented by basins, vessels and incurved bowls. Noteworthy antiquities of the period are: punch-marked square copper coin; antimony rod; finished and unfinished beads of semi-precious stones; and a terracotta head of a boy with well-marked features.

Period II, datable to A.D. 300 to 600, is marked by the remains of houses built of baked bricks and rammed floors of brick-bats, gravel and black and yellow soil.

The ceramic industry of the period is characterized by a thin ware bearing shining black polish on the interior and red and black on exterior, besides a red slipped ware snowing incised decorations. A rim of a vase of this ware bears inscription *Maharupa* ('great beauty'), written in Brahmi script of the late Gupta period.

Period III, datable to *circa* A.D. 700 to 900, is characterized by houses built either of baked bricks or of well-dressed slate stones.

Thin well-polished black-and-red ware continues to be the ceramic industry of this period also. Some pieces bear a remarkable golden slip with graffitti marks.

Other important finds of the period are: a square red sandstone piece with rosetted circle and symbols like *padma, ghata* and deer; another stone piece with Nandi in *anjali-mudra* in human form; a red sandstone image of seated Ganesa; and a copper weight. Besides, household objects such as iron nails, arrow and spearheads; beads of semiprecious stones, glass and terracotta; gamesmen in terracotta, etc., were also found.

Period IV, datable to *circa* A.D. 900 to 1300, is represented by a structure built of reused bricks, probably a Buddhist *vihara* with rooms measuring 3.15 x 1.20 m, 2.90 x 1.20m and 1.20 x 1.00 m, having raised platform built of local white stones. The size of the brick is 32 x 20 x 7 cm. The ceramic industry of the Period was a plain red ware. A number of Buddhist sculptures belonging to this Period are still preserved at the site.

44. EXPLORATION IN DISTRICT HOSHANGABAD.—Dr K. D. Banerjee and Sarvashri B. P. Bopardikar, P. R. K. Prasad, Nambiraju, S. K. Gulrandhe, K. S. Venkatramiah and B. K. Rudra of the Prehistory Branch of the Survey undertook explorations and excavations, as a part of the project work in the Narmada valley, between Joga Kalan and Dhamasa at different localities. Excavations were confined to the broken hill range south of Narmada at the site of Hirapur Khadan in Harda Taluk of District Hoshangabad. The stratigraphy that has been observed uniformly in all these localities conforms partly to De Terra's observations on the Narmada. This stratigraphy, however, is not found in the river banks as mentioned by De Terra.

The stratigraphy observed in general is as follows (Fig. 1):

IX Light brown clay.
VIII Minor disconformity?
VII Reddish brown compact clay with small blocks of stone.
VI Minor disconformity ?
V Shingle deposit of angular blocks and pebbles of sandstone.
IV Disconformity.
III Detrital Laterite.
II Disconformity.

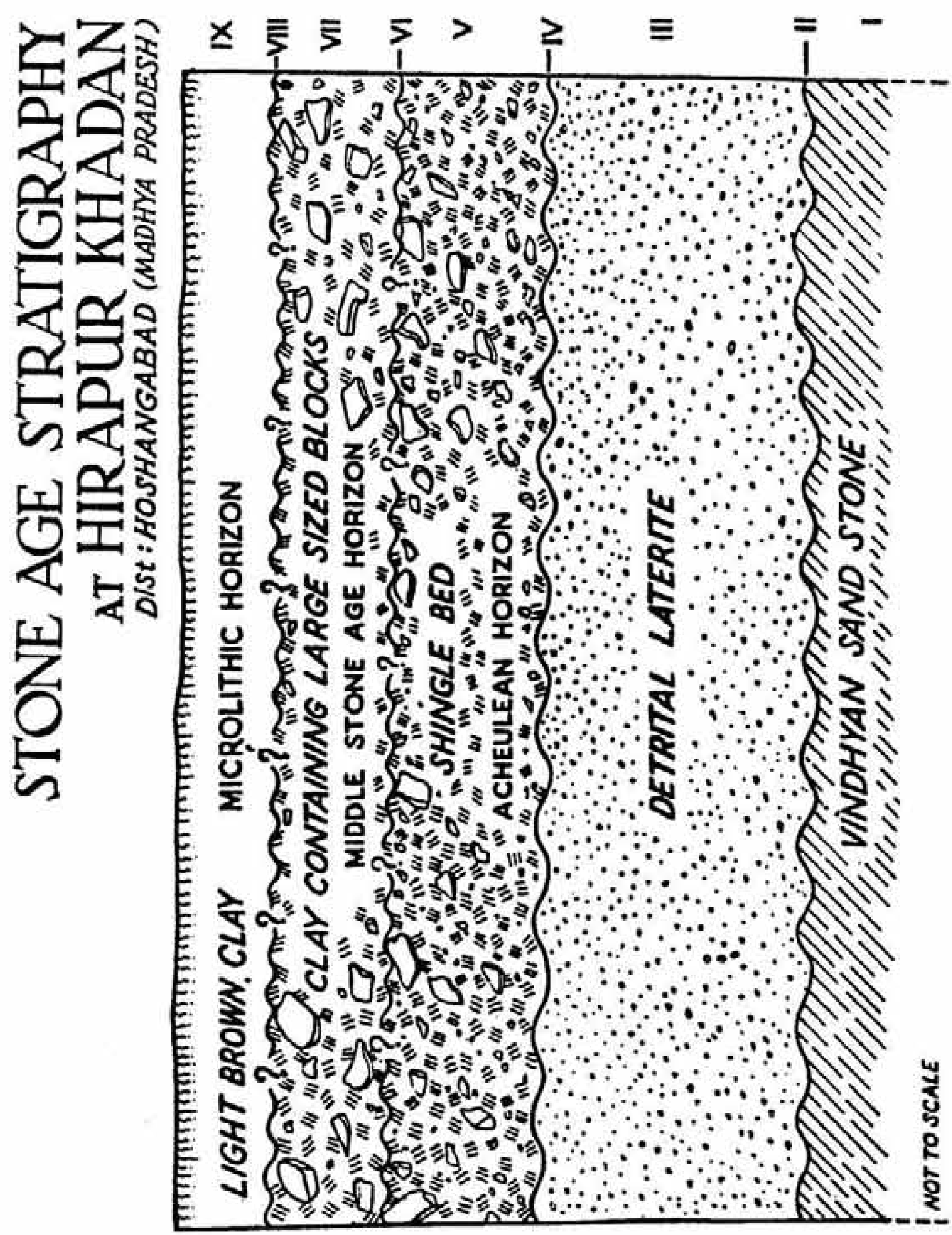

STONE AGE STRATIGRAPHY
AT HIRAPUR KHADAN
Dist : HOSHANGABAD (MADHYA PRADESH)
LIGHT BROWN CLAY
MICROLITHIC HORIZON
CLAY CONTAINING LARGE SIZED BLOCKS
MIDDLE STONE AGE HORIZON
SHINGLE BED
ACHEULEAN HORIZON
DETRITAL LATERITE
VINDHYAN SAND STONE
NOT TO SCALE
IX
VIII
VII
VI
V
IV
III
II
I

FIG. 1

I Vindhayan sandstone, crevices of which show *in situ* lateritization of uncertain date, marked IA for convenience, and shows spheriodal weathering (pl. XX A).

In the above stratigraphy, horizons V, VII and IX are implementiferous.

The pebbles of the horizon V are not water-borne ones. First, they occur at a very high level, where the river never reached. Secondly, their occurrence as products of exfoliation has been observed.

In the trenches excavated, it has been observed that the shingle bed is slightly weathered towards the base. This character gets gradually reduced with the increase in height.

This horizon contains upper Acheulian industry (pl. XX B), a big component of which are small flake and blade tools. The industry in horizon VII contains Middle Stone Age took, which show identity with the small flake and blade components of horizon V. But at no place the industry was found directly succeeding the Upper Acheulian, which is, of course, a distinct possibility. But chert, as raw material, appears, and tools become, in general, slightly smaller. Horizon IX contains microlithic industry which shows in its component genetic relationship with the industry in horizon VII. Even though it directly succeeds the Middle Stone Age industry we have not succeeded in getting an intermediate industrial stage or stages. Besides, the stratigraphy shows a possible minor disconformity.

45. EXPLORATION IN DISTRICTS HOSHANGABAD AND EAST NIMAR.—Sarvashri B. P. Bopardikar, K. S. Venkataramiah and S. K. Gulrandhe of the Prehistory Branch of the Survey explored the Narmada valley around Handia and Harsud and brought to light a number of Early Stone Age and Middle Stone Age sites at Balri, Bhadugaon, Bhamori, Dhenki, Handia, Hirapur Khadan, Joga Kalan, Malpone, Mangrol and Nayapura. The sites are situated on squat hills at an height of ± 300 m. The tools were obtained from lateritic gravel as well as from the shingle bed. The industry comprises mainly handaxes, a few cleavers, flakes and flake tools of Upper Acheulian character. The Middle Stone Age tools are slightly smaller and are made on cherty material as well as quartzite. The tool-types of the latter are varieties of scrapers, a few points and cores, including some discoidal cores. Stray microliths were also collected from few places.

46. EXCAVATION AT BHIMBETKA, DISTRICT RAISEN.—Dr V. S. Wakankar, assisted by Dr S. K. Arya of the Vikram University, Ujjain, excavated a rock-shelter site, BHIM III A-28 sector 5 and 6, at Bhimbetka.

The excavation revealed that the Upper Palaeolithic and the Mesolithic periods are separated by debris of rock-shelter. The Upper Palaeolithic industry is characterized by the non-availability of geometrical microliths, presence of fluted cores generally with obliquely faceted striking platform, burins, blades, large-sized lunates and occasionally scrapers made on chert. The deposit belonging to the Upper Palaeolithic period, unlike that of Mesolithic period is characterized by weathered lateritic soil and highly weathered chips of rock. These two formations probably indicate different climatic conditions.

A number of stone pieces of various colours, particularly the green one, which might have been used for preparing colours for painting, have been recovered. The beginning of the art of painting the walls and the human bodies in India may probably be traced to the Upper Palaeolithic period, as the paintings executed in green colour, are the earliest and may, therefore, belong to this period.

The Mesolithic level yielded engraved bones and beads.

The exploration of the rock-shelters at Bhimbetka brought to light paintings of the gigantic animal figures such as boar, bison and buffalo at BHIM III F-14, where skeletal remains from mesolithic, chalcolithic and early historical levels had been unearthed in the previous season's excavation. The size of the boar, decorated by zigzag, cross hatching and honeycomb patterns, is 4 m in length. Similar large figures of boar have been noticed in II F-9, III C-50, III C-19, III F-14 and III F-24. These rock-paintings (Fig. 2 b-d) of animal may suggest that the animal worship may have started either in the Upper Palaeolithic period or in the Mesolithic period. The total number of rock-shelters so far noticed is more than seven hundred sixty-two, which number perhaps is the largest in the world for a single complex. A painting of a female figure, probably Venus (pl. XXI A), was noticed in III E-15.

Two more localities with painted rock-shelters were noticed at Chunapani, about 12 km south of Bhimbetka, and at Chiklod. The former contains three rock-shelters while the latter more than sixty, the themes of paintings being hunting, ceremonial dance, rituals, animals, etc.

Dr V. N. Misra of the Department of Archaeology of the Poona University, assisted by Sarvashri S. C. Nanda, S. Prasad, Y. Mathpal, D. P. Sharma, Paul Forbes Irving, O. K. Singh, R. B. Sapre, P. R. Kulkarni, S. Prabhu, Km. N. Boga and Shrimati S. Nayak, excavated the Rock-Shelter III F-23 at Bhimbetka.

The excavation revealed a continuous cultural sequence ranging from the late Acheulian to the Mesolithic period, the total occupational deposit being 3.65 m showing the following stratigraphy.

Layer 1 : 5-10 cm thick; dull yellowish brown soft silty sand; geometric microlithic industry; tiny sherds of plain grey and red wares.
Layer 2 : 10-25 cm thick; slightly darker in colour and finer in composition than (1); microliths.
Layer 3 : 10-20 cm thick; brown and more sandy than (2); a characteristic feature is the presence of thin, weathered sandstone chips all through the shelter; declining microlithic industry.
Layer 4 : 15-20 cm thick; dull brown; more clayey and with more rock fragments than any of the upper layers; no microliths; industry of quartizite flakes, blades, micro-blades, side-scrapers, end-scrapers, etc.
Layer 5 : 40-50 cm thick; dull yellowish brown; more reddish and compact than (4); contains larger stone blocks; industry of quartzite flakes, scrapers,
Layer 6 : 80-90 cm thick; bright reddish brown; similar to (5) but slightly more compact and weathered; Acheulian industry.
Layer 7 : 90-100 cm thick; bright reddish brown; deeply weathered; far more compact and reddish than (6); Acheulian industry.
Layer 8 :80-90 cm thick; orange; heavily weathered, leading to a mottled appearance of stone blocks and chips; tools also weathered; quite compact; Acheulian industry.

The entire stratigraphy can be divided into three major units: layers 1-4, forming one unit; layers 5-6, second unit; and layers 7-8 third unit, with a possibility that layer 8, when fully exposed, may form a unit by itself.

The major occupation in the shelter, covering a deposit of 2.40 m, belongs to the Acheulian culture. Though there are no food remains or evidence of fire, there are positive indications that the shelter was used both for manufacturing tools and habitation. The

presence of a large number of handaxes, cleavers and other tools (Fig. 3), either as fragments, with damaged edges or with use marks testifies to the tools having been used in and near the shelter. Although artifacts occur all through the deposit, at least at five different levels, they are scattered on stone floors (pl. XXIB) that show deliberate human activity. At one level, between 2.0 m and 2.20 m depth, there occurred in an area of about 2 sq m ah unusually thick concentration of several hundred flakes and a few residual cores, all in a very fresh condition.

The raw material used for the Acheulian as also for later Palaeolithic cultures is quartzite which was available locally in plenty. For handaxes (pl. XXII A) and cleavers (pl. XXII B) a dark grey tough quartzite was used, while for other tools a softer yellowish coloured quartzite was used. Except in layer 8 where the tools are heavily weathered, artifacts from other layers have undergone very little weathering, and look remarkably fresh. In the Acheulian material so far analyzed (4705 artifacts) 26 percent of artifacts are tools and the rest waste-products like flakes, chips, cores, etc. Among tools, bifaces account for only 15 percent. The most common tool class consists of scrapers (39 percent) which include a wide variety of types including a Quina type (pl. XXII C) and transverse (pl. XXII D) scrapers. Other tool-types are prepared back and naturally backed knives, denticulates, notches and truncated flakes. The vast majority of non-biface tools are made on flakes and only a small number on thin tabular pieces. Unretouched Levallois flakes and blades are very common (12.40 percent not including waste). Among bifaces the ratio of cleavers to handaxes is 3:1. There is a complete absence of choppers and chopping tools. Cleavers and handaxes are all made on flakes, and by their symmetry of outline, even surfaces and thin section, display a very high standard of workmanship. The characteristic features of the assemblage outlined above clearly show that the Acheulian industry of Bhimbetka belongs to a very late phase of the Acheulian culture.

The industry of layer 5 is to a considerable extent a continuation of the Acheulian industry. Various kinds of scrapers, denticulates, knives, notches, etc., were obtained from this stratum. It has no bifaces however. Also the proportion of tools made on thin tabular pieces registers an increase. The Middle Palaeolithic industry (Fig. 2a) of Bhimbetka thus clearly evolves out of the indigenous Acheulian.

The industry of layer 4 again develops out of the preceding industry of layer 5, but contains more blades. The tools, however, tend to be smaller. The blades are narrower and thinner than those occurring in the previous layers. Besides, there are a number of micro-blades of the type that became common in the Mesolithic levels.

The microlithic industry of layers 1-3 is made of siliceous material which is not available locally. It must have been brought to the site from its source in the basaltic lavas, the nearest source of which is near Barkhera, some 5 km to the south. The industry is geometric in nature and comprises blunted-back blades, truncated blades, triangles, trapezes and crescents. The commonest tool-types are blunted back blade and scalene triangle, the crescent being occasionally present. A small quantity of quartzite blades, micro-blades and flakes also persist. Other materials in the Mesolithic levels consist of hammers, querns, rubbers and occassional perforated discs, all made largely of basalt. In the topmost layer tiny sherds of plain red and grey wares occur in small numbers.

47. EXPLORATION IN DISTRICT UJJAIN.—During the course of his exploration, Shri V. K. Tiwari of the Northern Circle of the Survey discovered chalcolithic sites at Jalod and Unchahera on the bank of the river Kurer in Khachraud Taluk, Barkhera



FIG. 2

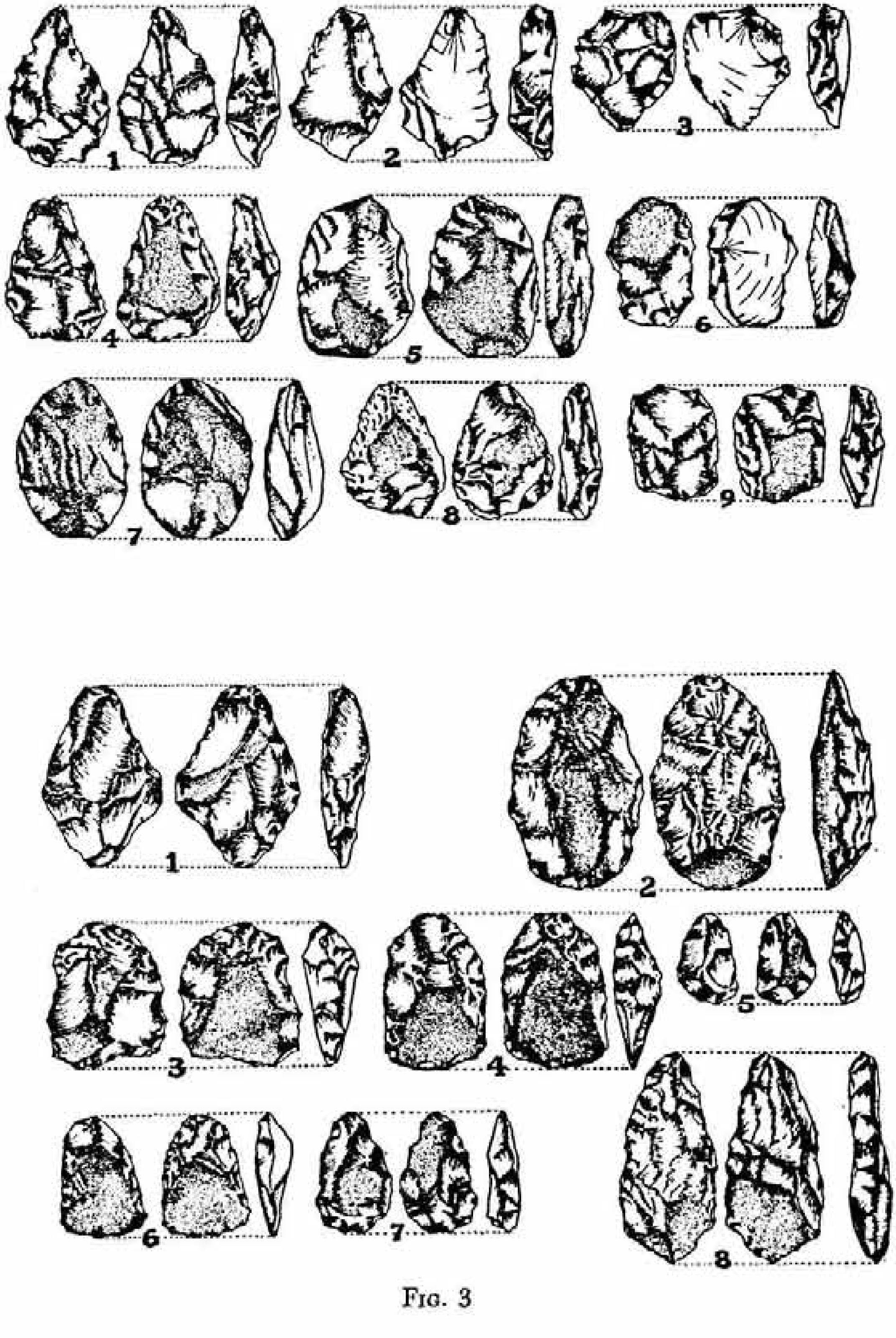


Fig. 3

Khurd on the bank of the river Sipra in Mahidpur Taluk, and Phootipal on the bank of the river Chooti Kali Sindh in Tarana Taluk.

He also discovered early historical black-and-red ware sites at Ajanda, Bamagar, Garaoda, Kantharkheri, Kararwas, Narsingha, Paslod and Ranaoda in Bamagar Taluk, Bichrod, Dhuletia, Singaoda and Sodang in Ujjain Taluk, Kanashia and Piplaikayatha in Tarana Taluk, Nipania Badre in Mahidpur Taluk, and Takraoda in Khachraud Taluk.

He also located early historical and historical sites at: Akyadhaga, Bani, Bansingha, Ghitawad, Dhablasia, Ghosla, Hapakheri, Jhutawad, Narainkheri, Parlia *alias* Kailashpur, Piplaibhim, Piplai Ghat, Rani Pura, Singh-deval and Sipawara in Mahidpur Taluk; Gavri, Golva, Kanashia, Kareri, Kath Baroda, Khara Kheri, Limboda, Makron, Mallupura Mergarh and Paldoona in Tarana Taluk; Birgodha-Randhir, Jamalpura, Lohana, Molana, Nanar Kheri, Navda and Rajota in Bar-Nagar Taluk; Ringnodia, Rohal Kalan, Run Khera, Tumni, Shrivachh and Umarna in Khachraud Taluk; Bhesoda, Bijasenitekri, Kokla Kheri, Nanakheri, Narwar and Nipania Sunar in Ujjain Taluk.

Besides, he also noticed Paramar period temples and sculptures at: Bhesoda, Chintamani, Dablagori, Dhuletia, Ghattia, Gunaia, Kaliadeh, Kamer, Khemlasa, Khilchipur, Nanakheri, Panbihar, Pingleshwar, Piploda-Dwarikadhish, Sodang and Undasa in Ujjain Taluk; Akyadhaga, Bolkhera Ghat, Delchi Buzurg *alias* Badi Delchi, Dhulet, Ghosla, Jorimalakha, Makla and Mahidpur in Mahidpur Taluk; Bamnapati, Bamagar, Datarwa, Gazni Kheri, Guraoda, Igoria, Jahangirpura, Jamalpura, Kantharia, Kharotia, Kharsodkhurd, Kheranarain, Molana, Nimboda, Palsora, Paslod, Ranaoda, Singaoda and Suwasa in Bamagar Taluk; Jalodia, Khachraud, Min and Rajgarh in Khachraud Taluk; Aurangpur, Baghera, Kareri, Kathbaroda, Mergarh, Nainawad, Naleshri, Shamnera and Tukral in Tarana Taluk.

MAHARASHTRA

47. EXCAVATION AT DAIMABAD, DISTRICT AHMEDNAGAR.—The South-western Circle of the Survey, under the direction of Sarvashri M. N. Deshpande and S. R. Rao, assisted by Sarvashri S. A. Sali, P. Narayana Babu and B. Narasimhaiah 78m, resumed *(1958-59,* pp. 15-18) the excavation with a view: (i) to establishing the cultural horizon of the four unique bronzes (pls. XXV A-C; LXXXIII and LXXXIV) found by a clandestine digger at the site; (ii) to re-examine the cultural sequence, indicated by the earlier excavation; and (iii) to ascertain the purpose of construction of circular structures suspected to be furnaces, noticed at a number of places near the habitation site. Except in the central part of the mound where the traces of occupation in the late Medieval period were noticed the entire site was occupied only during the chalcolithic period. The site was divided into four sectors, I, II, III and IV. The excavation revealed the following sequence.

Period I, represented by the neolithic culture comparable to the neolithic culture of south India, is further divided into two Sub-periods IA and IB. Sub-period IA is distinguished by the occurrence of burnished grey ware, some of the bowls of which bear post-firing ochre painting on the rim. Sub-period IB, on the other hand, is marked by the introduction of hitherto unknown painting tradition, namely the red-on-grey and red-on-red wares. The design repertoir (pl. XXIIIB) consisted of simple horizontal bands, vertical wavy lines drawn in groups, vertical and oblique dented lines, cross-hatched bands and ladders, antelope and arrowheads. It may be recalled that the arrow motif occurs on the black-on-red painted ware of Sawalda, associated with the Late Harappan ware of the Tapti valley. Three different ceramic industries have been identified here in this

Sub-period: a grey-slipped ware with crackled surface; a dark grey burnished ware; and a dull red ware. The vases of the last mentioned ware are sometimes treated with a slip. In addition to these, a dull grey ware, either with or without burnished surface was also found to be in use. Most of the wares are either handmade or turned on a slow wheel. The use of the fast wheel is limited to a very few vessels. It was observed that this period is not represented in the sectors I and II, where the occupation begins with Period II.

Period II, is characterized by the typical Malwa Ware, including the cream-slipped, grey, coarse grey and coarse red wares. Some of the sherds in the coarse red ware are also painted in black with vertical and horizontal bands. A few vessels in this ware were found to be treated with a grey slip. Particular mention may be made of a large sherd of well levigated clay, treated with a chacolate slip showing a generic affinity with the Sawalda ware. The vessel has an externally thickened rim.

The cream-slipped ware, occurring in fairly large quantities, is generally thick and coarse in fabric. The colour scheme being black or chocolate on a cream base. The design consists of combs in panels separated by horizontal bands, hatched diamonds, dented vertical lines in panels, criss-cross lines and thick vertical strokes between horizontal bands. Remains of silos were also found in the early levels of this period. An interesting discovery of this period was a pit cut into the natural soil, which yielded a large quantity of animal bones.

Period III is distinguished by the use of the (i) Jorwe Ware along with the (ii) Malwa and Lustrous Red and grey wares. The major types in the Jorwe Ware are carinated bowl-on-stand (pl. XXIV A), concavo-convex sided bowls with a rounded base, high-necked jars, spouted carinated bowls with (pl. XXIV G) or without flaring rim, globular pots with constricted neck, miniature pots and storage jars with beautiful applique designs (pl. XXIII A). The painted designs include slanting strokes and hatched diamonds enclosed by horizontal bands and zigzag lines drawn between horizontal bands, etc. Some of the vessels are painted on the interior with simple horizontal or vertical lines and dots with or without radiating lines.

The red ware produced from a fine levigated clay is well fired and treated with a dark slip both externally and internally. The main type in this ware is a bowl with a carinated body and beaded rim. The exterior especially above the shoulder is painted in black oblique slashes enclosed by horizontal bands. This ware compares favourably in fabric and treatment with the Late Harappan Ware, discounting the painted designs which are typically in the Jorwe style.

A number of urn-burials and double urn-burials were also found in the late levels of this period.

Another noteworthy feature of the early levels of this period is the occurrence on the Jorwe pottery of unmistakable Indus signs (pl. XXVI) similar to the graffiti occurring on Late Harappan pottery. The basic signs of the Indus writing are used here both singly and in conjunction with other basic signs.

The most important evidence, however, was provided by the excavation in Sector III where the bronzes were found. Here the excavation yielded a fairly thick and sturdy black-painted red ware represented by such types as vases with heavily beaded or collared rim closely resembling those occurring in the Late Harappan assemblages from the central Tapti basin in District Dhule.

The significant contribution of the excavation, however, is the identification of the furnaces. In Sector I, a large furnace with two flues was laid bare in the Malwa level. An interesting feature of the furnace is that while one opening was used as a stoke hole, the

other connected with a large pot ensured easy flow of metal. Thick pot-sherds have been used for building the walls of the furnace which were finally plastered on both sides with mud. The earthen tubes through which the molten metal flowed have also been recovered. The furnaces are built close to the river to ensure enough water supply for cooling the molten metal. The furnace can be assigned to the overlap phase of Jorwe and Malwa cultures. The occurrence of large quantities of lime and charcoal near the furnaces as also the presence of slag indicate that these furnaces were used for smelting metal which, in all probability, was copper.

Vestiges of another furnace were encountered in the south-western extremity of the mound (Tr. FZ 65), in the Jorwe level. It has two concentric circular enclosure walls of clay of 1 cm thickness. The outer wall which is slightly ovalish on plan, has a flared rim, while the inner one is circular on plan and has a flat bottom.

Noteworthy antiquities found from the various levels include: beads, biconical, long and short barrel-shaped, standard spherical and thin disc made of agate, jasper, shell, crystal and steatite; terracotta figurines (pl. XXIV B), mostly animal, such as bull, elephant and horse (?), and a female figurine, probably of Mother Goddess; copper objects, such as fish-hook, ring, bangle and piece of wire; stone tools like ring-stones, stone balls and microliths represented by parallel-sided blades, lunates, backed blades, pen-knife blades and points of chalcedony, jasper and quartz. The most important find of the season is a small bone dagger (pl. XXV D), with its hilt in the form of an anthropomorphic figure, simulating ceremonial daggers of the West Asian Bronze Age sites. Two holes meant for revetting a gold or silver plate below the hilt are also visible. The significance of the find is enhanced by the findspot which is just 2 m away from the location of the bronzes.

48. EXPLORATION IN DISTRICT DHULE.—During the course of his exploration, Shri S. A. Sali of the South-western Circle of the Survey, made interesting geomorphological observations in the Tapti valley which throw further light on the depositional processes in this valley, particularly in the latter part of the Late Pleistocene. Between Torkhed and Hingona on the right bank of the Tapti, in Shahada Taluk, a series of silts with a couple of intervening brown horizons, perhaps fossil soils, lie against an older set of deposits. This older set of deposits does not seem to be earlier than the Middle Palaeolithic period as is indicated by a few artifacts recovered from the gravels occurring in its lower level.

At Sarangkheda in Shahada Taluk, the Tapti alluvium was seen preserved in patches on the top of basalt outcrops at a height of over 152.40 m (500 ft) above the present bed of the Tapti. The extant patches of alluvio-colluvial gravel preserved on the slope of one of the outcrops here contain fresh artifacts either of the Late Upper Palaeolithic or the Mesolithic. The artifacts mainly include debitage and only occassionally fluted cores and blades chiefly on chalcedony. The fresh nature of the artifacts and their occurrence in large quantity suggest that the site represents a factory site.

A site with microliths, chiefly on chalcedony, was discovered at Boradi in Shirpur Taluk, on the bank of the Ambad nullah.

A chalcolithic habitation site was discovered at Sarangkheda in Shahada Taluk on the right bank of the Tapti. The site yielded pottery of (i) Sawalda ware, (ii) Late Harappan Ware, (iii) black-and-grey ware, (iv) burnished grey ware and (v) thick coarse ware with incised and applique designs, besides a rubber stone and a few fluted cores. Stray pottery of the chalcolithic period was also collected at Hingona in Shahada Taluk at the base of a cliff.

50. EXPLORATION IN DISTRICT OSMANABAD.—During the course of exploration in the District, Dr S. B. Deo of the Deccan College Post-graduate and Research Institute, Pune, and Shri T. V. Pathy of the Marathwada University, Aurangabad, discovered an extensive mound at Irle, 16 km south-east of Ter, in Osmanabad Taluk. The mound is about 3.24 hectare in extent and has a habitational deposit of about 7 m. The mound, probably the most intact and most extensive one with Satavahana habitational deposit, yielded black-and-red and red polished wares and beads.

51. EXCAVATION AT TER, DISTRICT OSMANABAD.—The Deccan College Post-graduate and Research Institute, Pune, represented by Prof. S. B. Deo, and the Marathwada University, Aurangabad, represented by Shri T. V. Pathy, jointly excavated the site of Ter, which had yielded in surface exploration, a large number of kaolin and terracotta figurines, ivory statuettes, beads and coins of the Satavahana period. It may be recalled here that the site was earlier tapped by the late Dr Dikshit and Drs K. D. Banerjee and B. N. Chapekar. One of the earlier excavations was of a limited nature and the report of the large-scale excavations is not yet available. Therefore, the excavation was undertaken with a view: (i) to confirm the cultural sequence of the site; (ii) to assign the date of the kaolin and terracotta figurines; and (iii) to know the nature of pre-Satavahana habitation, if any.

Of the several mounds (pl. XXVII), many of which are either disturbed by earth-robbers or by present day burials and habitations, Mound I (Lamture Mound) with 8-9 m habitational deposit, was selected for excavation. Two trenches, each measuring 4.5 x 4 m were laid. The entire cultural deposit could be divided into three phases datable between second-third century B.C. and third century A.D.

Phase I was distinguished by the occurrence of the Northern Black Polished Ware, a better polished black-and-red ware and the absence of Satavahana coins. The habitation of this phase starts on the black cotton soil.

Phase II is distinguished by the fact that at the end of the Phase I, the habitation seems to have been equipped by some sort of wooden barricade with teak planks fixed in position with wooden pins. This phase was marked by the absence of the Northern Black Polished Ware, red polished ware and kaolin and terracotta figurines.

Phase III was the most prosperous inasmuch as all the typical kaolin and terracotta figurines, beads and pieces of worked ivories as also black-and-red ware came from this phase, along with coins of Satakarni and subsequent kings of the Satavahana dynasty. The prosperity was further reflected in the find of red polished ware, amphorae and scores of terracotta bullae. The structures of this period were constructed of baked bricks with floors of hydraulic lime-mortar, tiled roofs and attached soakage wells of terracotta rings. The habitation seems to have come to an end around third century A.D., as no finds of any period subsequent to this were encountered in the trenches of Md. I. Thus the excavation has indicated that the settlement was probably fortified in early Satavahana phase (Phase II), but in the later Satavahana phase (Phase III) the town was prosperous because of growing trade with western world as evidenced by terracottas, kaolin figurines, toys and ivory work.

52. EXCAVATION AT INAMGAON, DISTRICT PUNE.—In continuation of last year's work (*1972-73,* p. 24), Drs Z. D. Desai and M. K. Dhavalikar of the Deccan College Post-graduate and Research Institute, Pune, resumed excavation under the general

guidance of Drs H. D. Sankalia and S. B. Deo, assisted by Sarvashri C. G. Padwal, Y. S. Rasar and M. G. Abhyankar.

The excavation was confined to the Early Jorwe levels, (Period II, datable to *circa* 1400-1000 B.C.) on the central part of the mound INM I. The most important discovery was that of a complex of rooms which apparently formed a house. It consisted of a squarish room (3.90 x 2.55 m), to the east of which was large rectangular room (8.40 x 5.40 m). In the centre of the room was a trough-like depression (1.65 m in diameter) containing a *chulah* similar to that in use today. In this room were five large post-holes (max. dia. 28 cm). A similar set of post-holes was noticed in another room on the east (6.10 x 4.45 m). Adjoining the room to the north was another squarish room (3.90 x 3.80 m) containing a large circular mud-platform (dia. 1.87 m) for supporting a storage bin. This room thus appears to be the store-room (pi. XXVIII A) of the house. By its side in the north-west was yet another circular room (max. dia. 2.75 m) which contained a set of four flat stones to serve as supports to a huge storage jar. In the courtyard of the house to the north was a circular pit-silo.

In the courtyard of this house complex, just near the pit-silo, was found an interesting burial consisting of two four-legged urns (pl. XXIX A) carefully placed in a pit. The jars are of unbaked clay and have four squat stumpy legs and bulging belly. Of the two, the jar in the north was slightly taller (45 cm high), whereas the southern jar (30 cm high) was not complete but was intentionally cut into half vertically and only the portion on the left half was placed in the pit to the south, but adjoining the one in the north. The jars, however, did not contain any human skeletal remains. A globular jar of the Jorwe Ware, covered with a knobbed lid was, however, found in the northern jar. This jar also did not contain any human bones but below it was found the pelvis fragment of *Bos.* Although no human bones were found in any of the jars it is tempting to identify the jars as representing a symbolic burial for the simple reason that the clay jars, one complete and the other half, so carefully kept in a specially dug pit, could not have served any other purpose. This identification gains further strength from the Late Jorwe burial which is described below.

A unique burial was found in a later level but in the same area where the double-urn burial described above was noticed. It consists of a four-legged urn-burial (pl. XXX A) of the Late Jorwe period {*circa* 1000 B.C.) which is the only one of its kind and has so far no parallel within the country. The urn is made of unbaked clay and has four legs, its southern face resembles a human torso. The jar is 80 cm high and 50 cm wide and its maximum thickness is 3 cm. It is almost intact but for the large mouth fragment in the southern side which was anciently broken. The jar has a wide mouth with a featureless rim. On exposure it was found to contain an adult's skeleton of a male of about 35 years. He was kept in the jar in a sitting posture with the knees flexed up and the head turned down. All the bones and the legs including the toe are intact. It has been observed that almost invariably the portion below the ankle of an adult skeleton was chopped off and the exception made in the present case shows that the normal rule of the community was not applied. The burial offerings were a spouted vessel and a carinated bowl, both of the painted Jorwe variety, which were found by the side of the head. Of these, the spouted vessel is painted with a boat design having long oars. This motif becomes significant in the light of the current Hindu belief that the departed soul has to cross waters in a ferry in the heaven.

The mode of interment in the case of both the burials described above shows that the persons who were accorded such an elaborate burial must have been very important

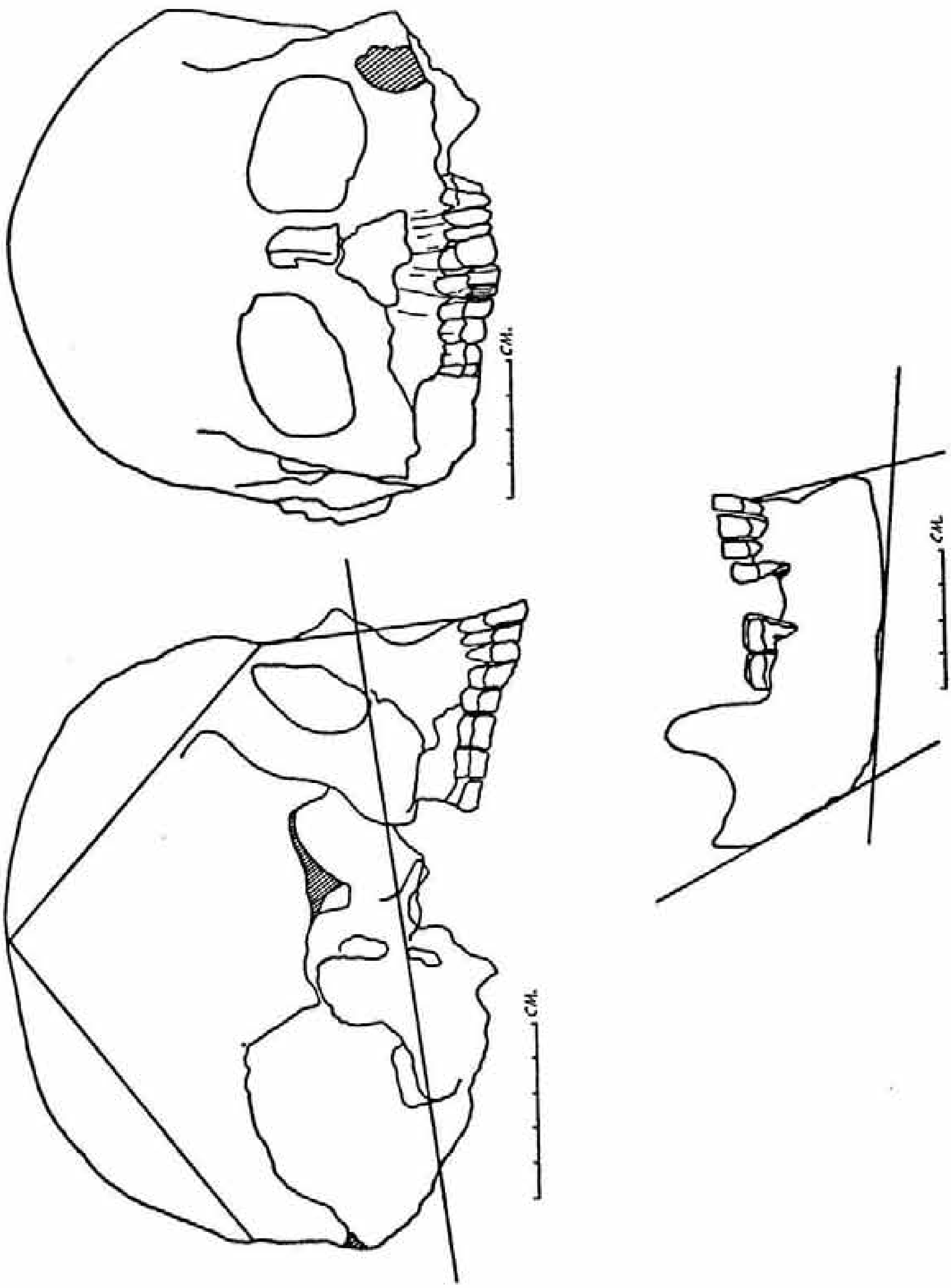


FIG. 4

in the community, may be the leaders or even the ruling chiefs of the settlement, for the mortuary ritual usually varies with the status of the person within the living community.

By the side of the burial described above, was encountered a twin urn-burial belonging to the Late Jorwe period. It contained the mortal remains of a two-years old girl in whose neck was found a necklace composed of alternately strung long barrel beads of red jasper and copper which indicates the status of her parents. In all probability she was the daughter of the person who was buried in a four-legged urn by her side.

Three more houses of the end phase of the Early Jorwe period were also laid bare. Of these, one was a large rectangular (5'50 x 3"35 m) structure (pl. XXVIIIB) of wattle and daub while the other two were circular on plan. Their maximum diameter was 2'75 m. It should be noted that the circular house-plan was so far confined to the Late Jorwe period *(circa* 1000-700 B.C.), but this year's work shows that it begins to occur in the final phase of the Early Jorwe period, and thus can be said to be connecting link between the Early and the Late Jorwe periods.

The result of the study of the human burials exposed in the excavation, by Dr G. L. Badam of the Deccan College Post-graduate and Research Institute is as follows.

Table showing the burials yielding human skeletal remains at Inamgaon (Locus INM—I)

	Burial No.	Age	Sex	Trench	Sealed bv layer
End of Early Jorwe (Period Ha)	61	Child	+	6-7	6
	68	18-20	F	C-3-D-3	6
Beginning of Late Jorwe (Period lib)	58	Child	+	D-7	5
	59	30-35	M	E-4	5
Late Jorwe (Period lib)	63	Child	+	D-8	4
	67	Child	+	E-4	2
End of Late Jorwe	64	Child	+	E-4	1

Burial no. 59 was unearthed from the central portion of the mound, a residential area in which houses of the elite are situated. This burial was found to be unique in several respects. The deceased individual was buried in a sitting posture in a large four-legged urn made of unbaked clay. The feet were not chopped off. The total complex of features exhibited in this burial are without parallel either in the Indian subcontinent or elsewhere.

The cranium and mandible (Fig. 4) from Burial no. 59 are one of the most complete and well preserved specimens available from chalcolithic cultures of western India. The individual represented in this burial is an adult male between the ages of 30-35 years. The cranial index (77.0) falls within the mesocranial category and the cranial capacity was estimated at 1336.7 cc. The dentition is well preserved with the exception of RI and LI which have been lost postmortem due to compression of mandible against maxilla. Attrition of the molar teeth in this specimen is unusual in that the formation of pits or

basins penetrating through the enamel into the dentine occurs in the intercuspal fissures rather than on the apex of the cusps themselves which is the normal condition.

While pathological conditions and abnormalities abound in the mandibular dentition of this individual, the maxillery dentition is free from oral disease. Pathological conditions of the dentition which plagued the skeleton include ante-mortem tooth loss (pl. XXX B), severe *caries* formation and heavy calculus deposits. These conditions are probably attributable to masticatory stress imposed on dental structures by a newly-assumed diet composed primarily of grains. The pathological conditions evident in dentition permit the formulation of hypotheses regarding environmental stresses which may have affected these early farming communities.

The individual analysed exhibits a slightly novel phenotypic pattern m contrast to the pattern previously reported for prehistoric populations of the Deccan plateau. Since its new morpho-metric features are within the expected range of variation for a given population, it should be considered as part of the indigenous population of western India during the chalcolithic period.

Among the vertebrate fauna recovered from this season's excavation are: *Eguus Caballus* Linn. (Domestic Horse), *Bubalus Bubalis domesticus* Linn. 1958 (Domestic Buffalo), *Bos indicus* Linn. 1958 (Indian humped cattle), *Canis fami-liaris* Linn. 1958 (Domestic dog) and species of *Cervus, Axis* and *Antelope* (all wild).

The assemblage of animals discovered throws considerable light on the food-economy with respect to cultural evolution of the chalcolithic people at Inamgaon.

A fossil *of Hippopotamus* (pl. XXIX B) was discovered along the lower reaches on the left bank of the river Ghod, almost opposite to the site of Inamgaon. This is the first record of fossil *Hippopotamus* outside the Siwalik, Narmada and Godavari Zones. The present discovery sheds considerable light on palaeo-environmental conditions prevailing in the Ghod during the Pleistocene times. It is presumed that the sediments have been deposited either as a braid bar or point bar with a series of water pools in them. This is indicated by the occurrence of lenticular bands of silt and clay (indicating periodic flooding of the river) in the pebble gravel. Such pools with grass cover favoured the habitat of the animal.

MEGHALAYA

53. EXPLORATION IN DISTRICT GARO HILLS.—Drs T. C. Sharma and H. C. Sharma, assisted by a batch of six students, of the Department of Anthropology of the Gauhati University, explored the region between Chibragiri, and also Michigiri area, and brought to light two Stone Age sites at Charm Abri and Michingrenchep. The collection of tools, numbering one thousand five hundred and sixty-seven includes handaxes, cleavers, choppers, various types of scrapers, points, borers, blade tools, burins, microliths, etc. Besides, a site yielding a large number of palaeolithic and neolithic tools was also disc overed on the ridges of the Arbella range around Waribokgiri.

ORISSA

54. EXCAVATION AT RAIBANIA, DISTRICT BALASORE.—The Department of Archaeology Government of Orissa, conducted small-scale excavation at Jaya Chandi temple-site, located in between the western and southern gate of the Raibenia Fort, with a view to exposing the *mastaka* portion of a collapsed temple. The excavation has exposed four rooms, of an average size of 12 sq m inside the dilapidated compound wall.

55. EXPLORATION IN DISTRICT CUTTACK.—During the course of exploration, the Department of Archaeology, Government of Orissa, discovered ancient sites at Dhanisha, Kolanapur, Sathalapur and Tanara.

At Dhanisha, a Siva temple-complex, built in baked bricks and datable to *circa* ninth century A.D., known as Panchapandava group of temples, was noticed. The ancient site at Kolanapur on the bank of the river Chitrotpala yielded Buddhist images, such as Tara and Buddha in *bhumisparsa-mudra* datable to *circa* ninth century A.D. A dilapidated *sapta-matrika* temple with images of Chamunda, Mahesvari, Indrani, Brahmani, Kaumari, Vaishnavi, with baby on their laps, and Virabhadra, datable to *circa* ninth century A.D., was discovered at Sathalapur. At Tanara, inside the Tirtha Matha, the images of *dasabhuja* Mahishamardini Durga, Narasimha, Vishnu, Rama, Parasurama, Surya, Chamunda, Ganesa, datable to seventh to thirteenth centuries A.D., were noticed.

56. EXCAVATION AT KURMA, DISTRICT PURI.—The Department of Archaeology, Government of Orissa, conducted a small-scale excavation at the ancient Buddhist site at Kurma near Konarak. The excavation revealed a baked brick wall, measuring 29 m in length and other related structures, datable to *circa* ninth-tenth century A.D. The images of Buddha in *bhumisparsa-mudra,* Avalokitesvara and Heruka were also discovered.

PUNJAB

57. EXPLORATION IN DISTRICT SANGRUR.—During the course of exploration, Shri R. P. Sharma of the North-western Circle of the Survey, discovered two early historical mounds, about 5 and 6 m high from the surrounding ground level, at Satauj. The mounds yielded red, black-slipped and grey wares of the early historical period. Besides, a tank, built in two phases of Mauryan and Gupta periods, as evidenced by the sizes of baked bricks, was also noticed.

RAJASTHAN

58. EXPLORATION IN DISTRICT GANGANAGAR.—During the course of exploration, Sarvashri Devendra Handa and Manji Ram Bhardwaj of the B.T.T. College, Sardarshahr, discovered sites yielding: (i) an oval Taxilian copper coin at Birkali; (ii) a round copper coin of Altutmish at Karoti; (iii) two round copper coins of Somaladevi, one billion piece of Samantadeva, and a beautiful medieval terracotta mould of Mahishamardini at Pallu; and (iv) a square copper punch-marked coin at Pandusar, all in Nohar Taluk.

TAMIL NADU

59. EXCAVATION AT KANCHIPURAM, DISTRICT CHINGLEPUT.—The Department of Ancient History and Archaeology, University of Madras, resumed excavation at Kanchi puram. Trench KCM-14, measuring 4·0x3·0 m, was laid on the eastern side of the Kamakshi Amman temple and adjacent to the trench KCM-4. Trench KCM-15, measuring 4.0 x 3.0 m, was laid within the compound of the Subbarayamudaliar High School and excavated. The excavation confirmed the earlier known sequence of three cultural periods, of which Period I is sub-divisible into A and B.

Period I A is characterized by the occurrence of Russet-coated Painted Ware, red and black wares. The latter two are represented by a very few sherds. Other important

antiquities recovered include beads of terracotta, glass, shell and paste, a few copper and iron objects of indeterminate shape. This phase is tentatively dated to circa 200 B.C. to 100 B.C.

Period I B is represented by Black-and-red ware and brown slipped ware. Besides, a few sherds of the Arretine and Rouletted Wares were also found from the deposits of this Period. The antiquities of this Period include bangles and beads of glass, paste and a few of terracotta. The period may be tentatively dated to 100 B.C. to A.D. 300.

Period II is marked by a structure of three courses of baked bricks in Trench KCM-14, encountered at a depth of 3 m, and another structure of eight courses in KCM-15, encountered at a depth of 3.20 m. As the structures are built of reused bricks and the size of the brick is28 x l9 x l6cm there is a possibility that baked brick structures may be encountered in Period IB itself in future excavation. The ceramic industry of the period is represented by red-slipped, dull red and coarse red wares. The antiquities unearthed include: beads of glass and semi-precious stones like amethyst, carnelian and agate; a few bone objects, such as fragment of a stylus and a comb; terracotta objects like amulet; and coin moulds. The period is datable from *circa* A.D. 300 to 800.

Period III is characterized by the occurrence of coarse red and red-slipped wares. The coarse red ware was found in the upper levels of the period, whereas the red-slipped ware in the lower levels. The antiquities of the period include beads and bangles of glass, studs of glass and stone, a few beads of semi-precious stones, etc. The glass beads of this period are slightly bigger in size when compared to the ones from the other two periods. The period can be assigned to *circa* A.D. 800 to 1500.

UTTAR PRADESH

60. EXPLORATION IN DISTRICTS BASTI AND GONDA.—The Department of Ancient History, Archaeology and Culture of the University of Gorakhpur, in the course of exploration along the river Rapti (Achiravati) from Sravasti to the border of District Gorakhpur, in the above-mentioned Districts, located the following sites.

(GW=Grey Ware; BSW ^Black-Slipped Ware; EH=Early Historical; RW = Ring-well; KC=Kushan Coin; MP=Medieval Pottery; MC=Medieval Coin; and BS=Black Stone Sculpture).

District	*Village/Site*	*Cultural assemblage*
Basti	Airana	BSW. EH
"	Bahabol	EH
"	Bedaulagarh	MP
"	Bhari	EH
"	Budhi	MP
"	Gharthan	MP
"	Dhavarahava	MP
"	Garadahiya	MP
"	Hansurhi Avasanpur	MP
"	Jhujhura	BSW

District	*Village/Site*	*Cultural assemblage*
Basti	Kurthia	EH
"	Loharsan. dihwa	EH
"	Mahulani	MP
"	Murarh Buzurga	MP
"	Ohaniya Kot	EH
"	Oinia	MP
"	Pipra	MP
"	Puraina	EH
"	Rudhaula	MP
"	Shitalganj	BSW, EH
Gonda	Bansidila	EH
"	Basdela	MP
"	Bhairampur	MP
"	Devariya	EH
"	Janakavaram	BSW, EH, KC
"	Jarhar Purava	MP
"	Khamauha	EH
"	Majhaua	MP
"	Pehar	EH
"	Pipra Harakesin	BSW, EH
"	Ramavapur	EH
"	Rengai	EH
"	Takiava	BSW, EH
"	Tarahar Kot	EH
"	Utaroula	MP

61. EXCAVATION AT PIPRAHWA AND GANWARIA, DISTRICT BASTI.—In continuation of the earlier work *(1973-74,* pp. 27-28), the Excavations Branch (I), Nagpur, under Shri K. M. Srivastava, resumed excavation at Piprahwa, and at the adjacent mound, Ganwaria (pl. XXXI A).

Excavation in the eastern monastery (pl. XXXII) at Piprahwa confirmed that the plan of the structures in the earlier two phases was different from the last two phases (pl. XXXIII A). In the earlier two phases, the verandah was restricted only towards the entrance side on the west, whereas in the last two phases it was provided on all the four sides of the central courtyard. The entrance side, however, presented an altogether different picture. The cells in the last two phases were raised over the earlier ones but in an entirely different alignment. Further, excavation exposed a drain (pl. XXXIII B) of Phase III to discharge water outside the monastery on the north. The excavation yielded a few terracotta sealings and iron door sockets, hooks and hinges.

Excavation at Ganwaria exposed two massive baked brick structural complexes with impressive projected entrances to the east. Of the two, the larger one, on the western fringe of the mound, is about 39 m square. It has twenty-five rooms with a gallery at each of the

four comers. In the last phase the number of rooms was raised to twenty-six by providing a partition wall. The gallery at the comers was in alignment with the cardinal directions. In all, there were five phases in the complex (pl. XXXIV A). The size of the rooms in the last two phases varied from 4.50 to 1.50 m (NS) x 2.75 m (EW). The two rooms on either side of the entrance were the most spacious. Generally the flooring was made of brick concrete mixed with lime, though in Phase III pieces of burnt brick were also used. In Phase IV, burnt brick enclosures for keeping household goods were provided in certain rooms. A ring-well (pl. XXXIV B) of Phase II, having a diameter of 85 cm was observed in the gallery on the north-western comer. The rooms and galleries were constructed all around an open courtyard about 25 m square. The width of the outer wall was more than two metres and that of the inner 1.70 m on the top. The cross walls were more than 1-m thick.

The larger structural complex embodied certain extraordinary architectural features. Complete bricks were found to have been used only in the facing of the walls while the core masonry contained brickbats. The bricks used in the facing of the walls in the last two phases seem to have been rubbed before being set in the masonry to achieve a close joint. No regular order of headers or stretchers seems to have been followed in the courses.

Two projecting bastion-like structures (pl. XXXI B) with three comers each, were provided to the entrance. At a later stage, in order to restrict the entry, two walls, facing each other and projecting from the bastions, were raised at the easternmost fringe of the entrance. In front of the two walls was a pavement made of brick-bats (pl. XXXV A). The opening of the second entrance, however, continued to be 2'35 m. The entrance could not be excavated to the natural soil.

But for a few additional features, the smaller structural complex (pl. XXXV B), about 30 m to the north-east, was on the whole similar to the larger one. It was about 26 m square and had only twenty-one rooms restricted to three phases. Small rooms in the north-east and south-west comers, meant either for lavatory or bath, are additional features in this complex. To maintain privacy the access to these rooms was provided through another small room opening to the central courtyard. Though the number of rooms in the smaller complex was less, the entrance was wider, measuring 3.15 m. In the earlier stages, the entrance was towards the east. But at a later stage, it was sealed with the help of a curtain wall, and a narrow entrance of 1 .20 m wide was provided towards the northern side. Unlike the larger complex, the corner rooms on the south-east and north-west were the biggest and square in plan, one side being 3'10 m. The other rooms in the latest stage of occupation ranged in size between 3-10 to 2.30 m (NS) x3.10 m(EW).

Among the principal ceramic industries mention may be made of grey ware with paintings, red ware, usually associated with the Painted Grey Ware and Northern Black Polished Ware, the earlier two occurring in the lowest levels of the occupation. The earliest occupation at the site can be dated to eighth century B.C. on the basis of pottery and antiquities. The site continued to be under occupation till about third century A.D.

The entire occupational deposit could be divided into three periods. Period I was represented by grey ware dishes, painted externally at the shoulder in simple black bands, and red ware vases. The deluxe Northern Black Polished Ware was the distinctive ceremic of Period II. Period III is post-NBP Ware, belonging to the Kushan times.

Noteworthy antiquities from the excavation include: terracotta sealings, animal and human figurines (pl. XXXVI), stamp, bangle, wheel and gamesman; unique silver punch-marked coin; beads of glass and semi-precious stones like agate, carnelian, jasper etc.; stone weight; bone pencils; copper ring; iron objects like chisel, hammer, anvil, sickle,

arrowhead, door hinges, sockets and hooks. Besides, a terracotta Buddha head and a decorated horse (pl. XXXVII), the latter found at the entrance of the larger structural complex, were also recovered.

The proximity to the ancient site of Piprahwa, where the sealings with the legend Kapilavastu were found, the impressive structures, and the large quantity of antiquities hardly leave any doubt that they were the residential complex of the chief of the capital town of Kapilavastu, i.e. Sakya king Suddhodhana and his predecessors. In this connexion it can be recalled that the entrance of the structural complexes at Ganwaria is not towards the *stupa* as it happened to be in the case of all the monasteries at Piprahwa.

62. EXPLORATION IN DISTRICT DEHRA DUN.—Sarvashri R. P. Sharma, B. P. Saxena and M. M. Srivastava of the North-western Circle of the Survey and A. K. Sharma of the Excavations Branch (I) of the Survey, in the course of explorations discovered an early historical site at Shyampur Garhi, 3 km west of Virabhadra, the site excavated *(1973-74,* pp. 28-30) near Rishikesh. The mound is 10 m high and measures 300 x 75 m The ceramics obtained from the site belong to the early historical period similar to that found from phases I and II at Virabhadra.

63. EXCAVATION AT VIRABHADRA, RISHIKESH, DISTRICT DEHRA DUN.—The North western Circle of the Survey, under the direction of Shri N. C. Ghosh and assisted by Sarvashri R. P. Sharma, M. M. Srivastava, B. P. Saxena, Ashok Kumar and A. S. Sariya, resumed *(1973-74* pp. 28-30) excavation with a view (i) to confirming the stratigraphical sequence; and (ii) to tracing the plan of the Structures 1 and 2, which may be of temples. In order to realize the first objective a cutting, measuring 1.70 x 1.75 m, was excavated down to the natural soil.

Structurally, as also on the basis of coins, ceramics and other objects, three broad phases, namely early, middle and late, have been identified. The entire period of occupation ranged from early centuries of the Christian era to *circa* eighth century A.D.

The early phase is represented by a floor of brick on which among other things charred bone pieces were encountered at a depth of 4 m, which confirms last year's observation and speak of the dietary habits of the people. The ceramics are assignable mainly to the early centuries of the Christian era with a few sherds of steel grey ware and black slipped wares. The main types are sprinklers, bowls, vases and *handles.*

The beginning of the middle phase is marked by a floor of brick-bats and two parallel walls partly visible in the sections. Two sizes of bricks were noticed: 20 x 10 x 6 and 22 x 12 x 6 cm.

Almost contemporary to the walls was a Saivite sanctum, belonging to the early level of the middle phase, indicating that the Structures 1 and 2 may be temples. Within the sanctum, a *Siva-linga* resting on *bhadra-pitha* was exposed. The *linga* is octagonal at the base with tapering sides and round top. The girth of the *linga* at the base is 80 cm and at the top 72 cm and 85 cm at the base with receding courses in the middle. The first and third projecting courses at the base were built of moulded bricks. Only the eastern wall of this shrine is traceable as others are overlain by later structures. The size of bricks used in this structure are 23x15x6 cm, 22x12x6 cm and 27 x 12 x 6 cm.

The late phase is marked by some residential structures excavated last year and the Temple 1, of which northern and western portions have been partly exposed during this season. It revealed two sub-phases of structural activities. In sub-phase I, were built a central room (3.72x4.20 m) having perhaps a canopy on four pillars, as indicated by

four bases fixed on the comers of the walls. Along with it, flanking galleries in north, south and west were also added. The northern and southern galleries measure 5.16 x 250 m and 3.72 x 2.50 m. The galleries were paved with rammed earth. The whole complex was enclosed by a thick boundary wall, the bricks of which measure 33 x 24 x 7 cm, 24x19x6 cm and 25x13x6 cm.

In sub-phase II, rooms measuring 3.40x2.15 m and 3.45 x 2.10 m, in the east-west axis were exposed. These were found to be connected by a 1.40-m wide door.

64. EXPLORATION IN DISTRICT DEORIA.—The Department of Ancient Indian History, Archaeology and Culture of the University of Gorakhpur, conducted exploration along the bank of the river Burhi Gandak from Hetimpur to Gothani where it meets the river Sarayu. It was observed that the area has been subjected to intensive agricultural activities, with the result many of the ancient mounds have been either levelled or represented by low bulges. The explored area abounds in medieval sites. Sculptures, carved in black stone, were noticed at a number of sites. They are usually placed in small temples or unpretentious structures of recent origin. These include *Siva.-linga,* images of Ganesa, Surya and Vishnu surrounded by Dasavatara figures. The explored sites are shown in the table below :

(GW=Grey Ware; BSW=Black-Slipped Ware; MP=Medieval Pottery; and S=Black Stone Sculptures.)

District	*VillagelSite*	*Cultural assemblage*
Deoria	Babhanauh	MP
“	Bariyanpur Bharauta	MP
“	Bariyarpur	MP
“	Bhagalpur	GW, BSW
“	Bharabe Chaqr	MP
“	Bhisava	MP
“	Bindavaliya	MP
“	Bisunpura	MP
“	Bisunpurawa	MP
“	Churiya	MP
“	Devakali	MP, S
“	Dhusava	MP
“	Dol Ghhapara	S
“	Fattepur	MP
“	Gauri	MP
“	Gaur Kothi	MP
“	Harimathil Dih	MP
“	Kachila Dih	GW
“	Kalaval Dih	MP
“	Khurahuriya	MP
“	Kodara	MP
“	Kotawa	MP
“	Kuramanta Thakur	MP
“	Lalipar	MP

District	*Village/Site*	*Cultural assemblage*
Deoria	Mahadeva Tala	S
"	Mahua Dih	MP
"	Mahua Patan	MP
"	Majhauli	S
"	Majhauli (Dhusa Tikandih)	MP
"	Malhane	MP
"	Mundesa	S
"	Nautan	MP
"	Pakarhi	MP
"	Pandeypur	MP
"	Parakauli	MP
"	Parasadi Kodara	MP
"	Patana Paul	MP
"	Piyarua	MP
"	Payasi	S
"	Phariyaon Dih	GW, BSW
"	Piparajham	MP
"	Ramchhor	S
"	Ramnagar	MP
"	Rampurmvasthi	MP
"	Rampurgarh	S
"	Ranighat	MP
"	Ravatpar Amithiya	MP
"	Rudalpura	MP
"	Sahiyangarh	MP, S
"	Savai Patti	MP
"	Siravania	MP
"	Soghagara	MP
"	Sohanag	S
"	Tara Kulava	MP

64. EXCAVATION AT JAKHERA, DISTRICT ETAH.—The Department of History of the Aligarh Muslim University undertook excavation under the general supervision of Prof. K. A. Nizami and direction of Shri M. D. N. Sahi, assisted by Sarvashri E. Hoda and J. M. Siddiqi. Sarvashri A. Alvi, S. H. Haider, S. Saeedul Hassan and N. H. Zaidi rendered technical assistance.

The site, locally known as 'Kusak', is situated on the left bank of the river Kalinadi, about 16 km upstream as the crow flies from Atranjikhera. The objectives of the excavation were: (i) to determine the stratigraphical relationship between the black-and-red ware, and the Painted Grey Ware, found in abundance on the surface; and (ii) to know the exact nature of the settlement of the Painted Grey Ware people. The excavation revealed three successive and continuous cultural periods without any perceptible gap.

Period I is represented by the plain black-and-red, black-slipped and coarse red wares. Besides, some burnished grey ware was also encountered. The excavated area belonging to this period was found disturbed by later pits. However, mud-floors with burning activities were duly attested. The use of bamboo and reed for the construction of houses is indicated by the burnt mud-clods with reed and bamboo impressions. Among the antiquities recovered, mention may be made of pottery discs, core of agate, barrel-shaped bead of jasper and double-barbed bone arrowhead with incised circlet designs and hollow tang (pl. XXXVII A). Chronologically, this Period may be compared with Period II of Atranjikhera, as indicated by the similarity of pottery shapes.

Period II is sub-divided into two phases A and B. Sub-period II A is a transitional phase from the black-and-red ware of Period I to the Painted Grey Ware phase. The new element which makes its appearance in this Sub-period is the tradition of linear painting in black on red surface. Some of the designs are similar to those found on the Painted Grey Ware though not completely identical. Painted Grey Ware is represented by a few sherds only. On some of the sherds the painted design seems to have been obtained by the reserved technique. Painted designs in black are also found on black-and-red ware, and on red-slipped ware. A few black-slipped sherds of fine fabric have a similar but lustrous painting. The shapes of the painted red ware are similar to those of the black-and-red ware viz., bowls with carination and flaring sides. Significantly enough the frequency of the Painted Grey Ware or grey ware was found to be lesser than the rest of painted wares. Partially-exposed floors (pl. XXXIX) of this Sub-period indicate circular plan of the houses of wattle and daub. Noteworthy antiquities of the Period include: a copper bangle piece; stone balls; terracotta bead and balls; two combs, arrowheads and points of bone (pl. XXXVIII A); and a large number of pottery discs and wheels. Among these the most significant are the three terracotta geometrical objects (pl. XXXVIII B-E), two of them being triangular with circular hypotenuse, and the third squarish with one side circular.

Period II B is characterized by the use of Painted Grey Ware in larger frequency. This phase is comparable to Atranjikhera Period III. Besides, the painted red ware, black-and-red, black-slipped, coarse and slipped red wares of the preceding Period continued to occur.

The most significant feature of the settlement of this Sub-period is the existence of a low mud-embankment or bund with an extant basal width of 4.80 m and height of 80 cm. Partially-exposed mud floors with post-holes indicate circular as well as rectangular plans of the houses. Bricks, though known, appear to have been in use only for special ritualistic purposes.

The other finds of this Sub-period include: objects of copper, specially bangles; iron objects including hoe (?), sickle, ploughshare, rod, spearheads and arrowheads; bone objects (pl. XXXVIII A) terracotta objects like beads, discs, net-sinkers, balls, pendant and wheel; beads of steatite, carnelian and agate; and pestle and saddle quern pieces.

Period III is marked by the introduction of the Northern Black Polished Ware at the site, though culturally there is a continuation of the traditions of the preceding Period. However, deterioration in the paintings of the Painted Grey Ware is noticeable in this Period. The black-slipped and black-and-red wares also continue though in lesser quantity. Carinated *handi* and Ahichchhatra 10 A type are conspicuous by their absence.

The other finds recovered from the deposits of this Period include: terracotta discs, balls, beads, bangles, net-sinkers and gamesmen; beads of agate, jasper, amethyst, carnelian, crystal and glass; stone balls, pieces of saddle quern and pestle; iron sockets, rods and arrowhead; and an antimony rod of copper. Bone industry, seems to have been flourishing

in this Period as indicated by the occurrence of arrowheads and points and other objects in various stages of manufacture.

66. EXPLORATION IN DISTRICT FARRUKHABAD.—The Department of Archaeology, Government of Uttar Pradesh, under the direction of Dr K. C. Ojha, assisted by Sarvashri Hem Raj and R. C. Saxena, explored the ancient township of Kannauj. Of the many scattered mounds examined, the most promising was the one locally known as Club Ghar Teela, adjacent to the Civil Hospital. The mound is nearly 15 m in height and 200 m in circumference. From the exposed sections of the mound, black-and-red, Painted Grey and Northern Black Polished Wares, besides early historical pottery, were collected.

Moreover, a large number of antiquities collected by the local people were also examined.The antiquities include terracotta human and animal figurines belonging to Sunga, Kushan, Gupta and post-Gupta times, discs of various designs, potter's stamps, seals and sealings bearing Brahmi letters. Among the terracotta human figurines, mention may be made of a figure with dangling ears with slit marks, made of incised and applique technique. The projecting knot on the head is pierced by one or two holes. The drapery and necklaces are indicated with incised lines and pellets, while the breasts and navel are marked with incised circles. It may be recalled here that similar figurine has been reported from Ahichchhatra.

Further exploration at Masumpur brought to light the remains of an early medieval temple. A number of broken members of the temple and fragments of sculptures are lying in a heap on the top of the mound.

67. EXPLORATION IN DISTRICT GORAKHPUR.—During the course of exploration, the Department of Ancient History, Archaeology and Culture of the Gorakhpur University, brought to light the following sites along the bank of the river Sarayu in Bansgaon Taluk.

(GW=Grey Ware; NBP=Northern Black Polished Ware; EH=Early Historical; KC = Kushan Coin; MP=Medieval Pottery; and MC=Medieval Coin.)

District	*VillagelSite*	*Cultural assemblage*
Gorakhpur	Baghaura	MP
"	Bahpur	MP
"	Bala Bniti	MP
"	Banaval Deegar	MP
"	Baradadei	MP
"	Baragaon	MP
"	Baranagar	NBP, EH
"	Barhalganj	MP
"	Barpur	MP
"	Belsarha	MP
"	Beuri	MP
"	Bharauli	MP
"	Bhilta	MP
"	Bishunpura	EH
"	Charan Puduka	MP

District	*VillagefSite*	*Cultural assemblage*
Gorakhpur	Charhahar	MP
"	Chhitauna	GW
"	Chhoti Beuri	MP
"	Dhuriapar	EH, MP
"	Dughava	GW, EH, KC
"	Gopalpur	MP
"	Kahla	MP
"	Khutahan	MP
"	Kaorar	MP
"	Kukrahawa	MP
"	Kukurbhukka	MP
"	Kurhawa Am	MP
"	Madaria	MP, MC
"	Mehara	MP
"	Majuapar	MP
"	Makandawar	GW, EH, KC
"	Makrampur	MP
"	Maya Babla Ka Bhita	MP
"	Narahane	GW, EH
"	Narahpur	MP
"	Narainpur	MP
"	Nawada	MP
"	Neura Deura	MP
"	Ojhauli	MP
"	Padaulee Kesamai -ka- Thana	MP
"	Pushkar	MP
"	Raja Sahcb-ka-Kota	MP
"	Ramaman	MP
"	Ranipur	MP
"	Rasulpur	MP
"	Sahadauli	NBP
"	Sahashauli	EH
"	Sanichara	MP
"	Shahpur	GW
"	Yogiveer	MP

68. EXCAVATION AT SOHAGAURA, DISTRICT GORAKHPUR.—Dr S. N. Chaturvedi and Sarvashri Premsagar and Krishnan, under the general supervision of Prof. V. S. Pathak of the Department of Ancient History, Archaeology and Culture of the University of Gorakhpur, resumed excavation *(1962-63,* p. 56) at the site with the view (i) to determining the cultural sequence and (ii) to imparting practical training in field archaeology to the

post-graduate students of the department. The cultural sequence revealed by the excavation is as follows :

Period I is represented by handmade pottery with mat impressions on the exterior. The pottery is invariably made of coarse clay, and is ill-baked showing unoxidized core. The sherds collected from the excavation are too small in size to give an idea of the shape.

Period II is characterized by the introduction of potter's wheel. Although the handmade pottery of the earlier tradition continued, new ceramics were introduced which include plain and painted black-slipped ware, plain and painted black-and-red ware, red ware and coarse grey ware. Black-slipped ware is generally of medium fabric and is represented by bowls and miniature vases. A few sherds were found to be painted with black pigment showing vertical, horizontal and curved lines. In red ware a number of sherds show a burnished surface. Applique decoration and graffiti are also seen on some of the pots. In the black-and-red ware some sherds bear painted designs in white pigment. The usual shapes are bowls, dishes and globular vases. The linear patterns are sometimes painted both on the exterior as well as the interior. The uniformity in the delineation of the linear patterns suggests that some sort of stencil device must have been used in drawing them. Sometimes the designs are picked up in the reserved technique. The other finds obtained from the deposits of this Period include: beads of jasper, agate and steatite; and a bone stylus or shuttle. A charcoal sample from a lower level of this Period has been dated to 1330 ±110 B.C. and another from the middle level to 1230 ±130 B.C.

Period III is characterized by the presence of the Northern Black Polished Ware. However, the ceramic traditions of the preceding period such as the red, black-and-red, black-slipped and grey wares continue to occur. The frequency of occurrence of the Northern Black Polished Ware is markedly less. The commonest shape in this Ware is the dish with incurved rim. The red ware predominates with shapes like bowls, dishes, vases with incurved, splayed, collared, featureless and everted rims. The latest level of this Period is represented by fallen debris of a structure which was destroyed by a conflagration. The collapsed material indicates that the walls of the house were constructed of bricks and the ceiling of wooden beams and batons over which kneaded clay mixed with husk was spread. The associated floor levels of this phase yiedled: burnt grains (rice and wheat); beads of carnelian, agate, crystal and terracotta; punch-marked and cast coins; bone styli; copper objects such as hooks, rods, nails; arrowheads of iron; and a number of terracotta sealings mostly inscribed with proper names without titles and honorifics.

A charcoal sample from the upper level of this Period has been dated to 240 ±90 B.C.

Period IV is marked by the absence of the Northern Black Polished Ware, the dominant ceramic industry being the red ware represented by such shapes as bowls, dishes, vases, basins, spouted vessels, sprinklers and lids. Some of the sherds were found to be decorated with stamped and incised designs. Other antiquities of this Period include: iron and copper nails; stone and terracotta beads and pendants; terracotta animal and human figurines; and bone styli. Kushan and Ayodhya coins collected from the surface may also be assigned to this period. Of the structural remains of the Period, mention may be made of several ring-wells.

Period V is represented by a deposit of about 75 cm belonging to the medieval period. The pottery of this Period is mainly red ware of coarse fabric. A few sherds of the Glazed Ware have also been found. Other finds include: beads of stone, terracotta and glass; coins of Sharqi Sultans of Jaunpur; and miscellaneous objects of copper and iron.

69. EXCAVATION AT JAJMAU, DISTRICT KANPUR.—The Department of Archaeology, Uttar Pradesh, under the direction of Dr K. C. Ojha, assisted by Sarvashri Hem Raj, R. C. Saxena, J. N. Sharma and Sultan Saleem, resumed (*1973-74,* p. 31) excavation at Jajmau for the second season with a view to ascertaining the cultural sequence of the site. The excavation was conducted in the last year's trench. The natural soil, however, could not be reached.

The earliest level exposed belongs to the Kushan period, *circa* first century A.D., and is represented by houses of baked bricks, the size of the bricks being 38 x 24 x 5 cm and 39 x 25 x 5.5 cm. One of the house-complex has a room and a bathroom, provided with a covered drain. Some of the floors of the rooms are paved with baked bricks. A street with a row of houses on both sides belonging to this level has been exposed.

The pottery mainly consisted of red-slipped red ware of fine to medium fabric, showing stamped, decorative designs. Among the shapes, ink-pot type lids, bottle-necked sprinklers, bowls with inturned rim and flat base, and *makara-mukha* spouts are noteworthy. One of the spouted vases shows sitting lady figurine holding the spout in her hands. Other antiquities of the period include: terracotta human and animal figurines; copper antimony rods; bone dice; fragmentary kaolin bowls; beads, pendants and bangles made of carnelian, crystal, shell and terracotta; and inscribed seals and sealings in Brahmi characters. A terracotta- sealings bearing *svastika* mark and a stone tablet bearing legend *sangha* in Brahmi script are noteworthy.

The later levels of the site belong to the late medieval period, characterized by structures built of brick-bats and *lakhauri* bricks of various sizes. In one of the houses two stone medallions, bearing lotus, probably belonging to an ancient temple, were found lying in an inverted position on its floor. A fragment of a pillar was also found in the foundation of a wall. Noteworthy find of the Period was a hoard of thirty-six copper coins belonging to Sikandar Lodi (A.D. 1512).

70. EXPLORATION IN DISTRICT MATHURA.—Prof. R. V. Joshi of the Deccan College Post-graduate and Research Institute, Pune, and Shri M. G. Joshi of the Excavations Branch (II), of the Survey, discovered a Stone Age site on the Govardhan hill near Mathura. The site is situated on the low quartzite ridge near the southern bank of the Yamuna. The tools comprise choppers and flakes on quartzite. In a later exploration by Sarvashri A. K. Sinha and K. P. Poonacha, students of the School of Archaeology, some handaxes have also been found in the same area.

71. EXCAVATION AT MATHURA, DISTRICT MATHURA.—The Excavations Branch (II) of the Survey resumed *(1973-74,* pp. 31-33) excavation at Mathura for the second season. Besides imparting field-training to the students of the School of Archaeology, the main objectives of this season's work were: (i) to examine further the antiquity and contents of the ancient earthen fortification called Dhulkot; (ii) to obtain more details of the early historical settlements at Mathura; and (iii) to assess the nature of deposit at the site of famous Jaina establishment at Kankali Tila. With a view to achieving these objectives four sites were taken up for excavation: a part of Dhulkot (MTR-4) to north-west of Krishna Nagar near the Delhi-Mathura railway line; Hathi-Tila or the ancient mound (MTR-6) located close to Kishori Raman College; habitational area (MTR-7), near face of the Dhulkot; and Kankali Tila (MTR-5) outside the old fortification.

The work was taken up under the general supervision of Shri B. K. Thapar by Shri M. C. Joshi and Dr C. Margabandhu of the Survey, assisted by Sarvashri Avtar

Singh, J. N. Gandhi, R. C. Agrawal, Poorn Singh and D. K. Malik of the Excavations Branch-II, Sarvashri S. N. Raghunath and A. K. Sharma of the Excavations Branch, Nagpur, and Sarvashri S. N. Jaiswal and R. S. Sharma of the Headquarters office and Sarvashri Sushil Kumar Jain and C. P. Satsangi of the Northern Circle and Shri Padhiyar of the Western Circle. Since the areas excavated in most cases were found to be highly disturbed due to human or natural factors, the true stratigraphical horizon of many antiquities, especially those found in upper parts of the trenches, could not be properly established. However, on the basis of the excavation in the relatively undisturbed areas, the material remains could be ascribed to four cultural periods, dating from *circa* fourth-third century B.C. to *circa* fifth century A.D.

The cutting across the Dhulkot (pl. XL A) revealed two distinct phases of fortification, the earlier of which belonged to *circa* third century B.C. (Period I). The present evidence shows that the builders laid compact layers of earth mixed with *kankar* to a maximum height of 6.45 m over the undulating surface, making a pronounced slope on the exterior. The outer face was further strengthened with oblique packings. Sherds of plain grey, the Northern Black Polished and related red wares, terracotta animal figures, commonly associated with the Mauryan period and a copper punch-marked coin of thin and squarish variety were some of the important finds recovered from the core of the fortification wall. It appears that by about the beginning of the first century B.C. or slightly earlier (during Period II), the mud fortification had lost its utility, as its inner face was found to be superimposed by a layer of ash and mud which was overlain by remains of mud and baked-brick structure. The second phase of the mud fortification belonged to the beginning of Period III (Saka-Kushan times) when the defence wall was not only revived but also enlarged. From the fillings of the second phase were obtained stamped pottery, mainly grey, and associated wares. During this period some eroded portions of the fortification were also repaired. It is significant to note that no sprinkler was recovered from the fillings of the second phase.

According to this season's work, Period I *(circa* fourth-third century B.C.) was marked by the use of not only plain grey ware as reported earlier but also the Northern Black Polished Ware and other associated wares. Notable pottery types included bowls, dishes, vases, basins, jars and some miniature bowls. House-floors were made of mud while the roofs were made of earthen tiles. In one of the trenches (MTR-7), three pits were found cut into the floor containing ash, fragments of animal bones, terracotta figurines, terracotta beads, sherds of the N.B.P. and red wares besides some full pots in fine grey ware. Although the exact purpose of these pits could not be ascertained, they appear to have some ritualistic purpose. Other important antiquities of this Period comprised: beads of semi-precious stones; fragments of terracotta bangles; toy-cart wheels; earthen moulds for casting terracotta heads; and human, including elephant-riders (pl. XLI C), and female (pl. XLII A) and animal terracotta figurines including hollow (with cylindrical wheel-turned body) and solid types of elephants (pl. XLII B); a *vrisha-vyala* (pl. XLI B) stylized birds (pl. XLV A); a mother goddess with applique decoration and another with elaborate head-dress (pl. XLI A). The last object was recovered from the late levels of this Period.

Period II, *(circa* second-first century B.C.) which could be distinguished mainly on the basis of terracotta plaques showing female figures (pl. XLIII A) in typical Sunga style, was represented by a few mud floors. The ceramic industry although showing the continuity of the Northern Black Polished Ware to some extent was marked by red wares in some new shapes and designs.

Period III,(*circa* first-third century A.D.) which roughly corresponds to the Saka-Kushan period) of the local history, was characterized by structural remains in mud and baked bricks of diverse sizes, and mud floors with ovens. The roofing material consisted of tiles of which a number of fragments were found. The pottery types were represented by sprinklers, incense-burners, basins, bowls, spouted jars and pots with plain and decorated exterior showing painted and stamped designs. The latter included traditional auspicious symbols such as *triratna, srivatsa, sankha,* floral motifs, circles, loops, spirals, etc. Important finds of the period comprised: an ivory comb; an inscribed pot-sherd; pieces of shell-bangles; beads of semi-precious stones; and a terracotta rattle bearing *mangalya lanchhanas;* votive tanks; and terracotta figurines, both human including female (pl. XLIII B) and *vamanaka* (pl. XLIII C) and animal, of crude and fine types including a glazed example and two Yakshi figures with shapely body and charming dress (common to Mathura sculptures of this type); a few sealings; and Kushan copper coins.

Period IV, *{circa* fourth-fifth century A.D.) the remains of which could be exposed only in one trench was represented by traces of a few floors and brick-walls, and red ware, one sherd bearing an embossed design of the figure of Ganga (pl. XLIII D).

At Kankali-Tila, the site of the ancient Jaina *stupa,* an impressive tank-complex (pl. XLIV) with a circular structure near its entrance, ascribable to Period III (Saka-Kushan period) was exposed. Made of bricks of various sizes (40 x 26 x 5 cm, 38 x 26 x 4 cm and *30* x 15 x 5 cm) it was dug into the natural soil to a depth of 3.96 m. It is planned as a rectangle (8.10 x 9.10) with paved brick floor and a ramp on the eastern side and irregular ancillary compartments along its northern and southern sides. Set into the north wall of the tank was a stone channel *{pranala)* as an inlet for filling the tank up with water. The tank had four phases of construction, the first phase is represented by the lower part of the tank-walls, showing relatively worn out bricks. In the second phase, some repairs seem to have been undertaken and perhaps the ramp was added. During this structural phase fragments of an inscription and carved stones of the earlier phase had also been utilized near the bottom of the ramp. During the third phase the outer end of the ramp was extended and the circular structure (pl. XL B), probably the base of a small *stupa* was sealed by the extended passage. During the fourth phase some shabby structures of broken bricks seem to have been built. An outstanding find from this tank was an inscription of the fifth regnal year of Kanishka (I) which refers to a gift (probably of the tank itself) by a lady named Visakhamitra. Another epigraph on the pedestal of a damaged image, which is mutilated, mentions the year 80-5 of some era *{samvat).* A torso of a Tirthankara with a fish like *srivatsa* mark and a fine Jina head were some interesting sculptures found within the tank, besides two stone plaques, one depicting Mahishamardini and other Parvati in the post-Gupta style (pl. XLV B). Pottery collected from the tank-complex included sherds of the red ware.

In the higher area of the Kankali Tila were exposed large mud-platforms with a central passage, and remains of a few mud-floors. Amongst the antiquities unearthed here, mention may be made of a Jina torso, fragments of sculptured *suchis* and some damaged medieval sculptures and structural members. A few Indo-Grcek coins were also found in the upper levels.

72. EXPLORATION IN DISTRICT MIRZAPUR.—Shri R. C. Singh of the Department of Archaeology, Uttar Pradesh, undertook exploration in Chunar Taluk of the above mentioned District, and located loose Brahmanical sculptures, datable from the ninth to the eighteenth centuries A.D., at Baragaon, Inaria, Lakhan-Kunwar, Nagarpur, Raipur and

Shivapur. Further, at Baharamganj, Balua Ghat, Narainpur, Parihata, Tammal-ganj and Tekur were found temples, datable from sixteenth to eighteenth centuries A.D. Images of Vishnu, Siva, Ganesa and Bhairava of ninth-tenth century A.D. were found at Balua Ghat. An ancient mound located at Sariya yielded Northern Black Polished Ware, and fragments of terracotta animal figurines.

73. EXPLORATION IN DISTRICT TEHRI GARHWAL.—Sarvashri Hem Raj and R. C. Saxena of the Department of Archaeology, Government of Uttar Pradesh, carried out exploration on the right bank of the river Bhillangana, from Ghansali to Ghuttua a stretch of 40 km, and brought to light at Bajinga near Dhoped Dhar and Chakargaon near Chuttu temples, a large number of sculptures and three stone iascriptions datable to sixth-seventh centuries A.D. At Chakargaon ruins of an ancient temple were noticed. The ruins include a *Siva-linga* with *makaramukha-pranala,* a small water tank, image of Ganesa, two chaitya-windows with *mukha-bimba-amalakas,* pillars and fragments of door-jambs. The temple noticed at Bajinga, locally known as Nanda Devi-ka-Mandir, consists of a squarish *garbha-griha* and a projected entrance with *chaitya-window* and a plain tapering *sikhara* surmounted by an *amalaka.* All the four corners of the platform are topped by minor shrines. The sculptures consist of Vishnu, Mahishasuramardini, Nandi, etc.

WEST BENGAL

74. EXCAVATION AT BHARATPUR, DISTRICT BURDWAN.—In continuation of the previous year's work *(1973-74,* pp. 32-33), excavation was resumed jointly by the Eastern Circle of the Survey, represented by Shri S. K. Mukherjee, assisted by Shri K. P. Gupta, and the Burdwan University, represented by Shri S. N. Samanta, with the objectives of ascertaining the culture-sequence of the site and of obtaining more evidence on the conti nuance of the painted black-and-red ware into the succeeding Iron Age. The excavation revealed four cultural periods, distinguished as below.

Period I represents the late chalcolithic phase which is evident by the restricted use of black-and-red ware, plain or painted in white, black-painted and white-painted red ware and handmade pottery. Among other finds, a few copper objects, tiny stone celts, a few microlithic tools, steatite beads and bone tools are noteworthy. The presence of a few reed-impressed burnt clay plasters indicated that the inhabitants lived in huts. Besides, as in the last year's excavation, two open hearths were encountered.

Period II, which shows an overlap with the preceding period, was marked by the introduction of iron implements. The ceramic tradition of the earlier period continued, but the fabric became coarser. Of special interest was the discovery of a sherd of the Northern Black Polished Ware along with a few sherds of the associated black-polished ware from the upper levels of the period. The site remained deserted after this period.

Period III is distinguished by the occurrence of a baked brick structure, of which only a few courses of the foundation are still extant. No firm date can be assigned to this short-lived period.

Period IV which overlies the deposit of the preceding period with a break in between witnessed the construction of the *stupa.*

75. EXPLORATION IN DISTRICT MIDNAPORE.—The Tamralipta Museum and Research Centre, Tamluk, explored around the famous excavated site Tamluk, and collected various finds, which include: microliths; polished neolithic bar-celts; bone points, awls,

harpoons; copper and bronze rings, bangles, fish-hooks, celts; pottery including neolithic, chalcolithic (pi. XLV C), Northern Black Polished and Rouletted Wares; beads of agate, carnelian and crystal in various shapes; small circular seals of semi-precious stones; large number of terracotta human and animal figurines datable from the Mauryan to the Gupta period; terracotta ram-shaped votive carts; and punch-marked silver and copper coins.

II. EPIGRAPHY

SANSKRITIC AND DRAVIDIC INSCRIPTIONS[1]

ANDHRA PRADESH

1. VIJAYANAGARA INSCRIPTION, LEPAKSHI, DISTRICT ANANTAPUR.—This lengthy inscription of nineteen lines in Telugu characters on a bed rock, exposed during the clearance work on the western side of the Raghunatha shrine, dated Saka 1415, year *Pramadi,* month of *Pushya, bahula makara sankranti* day, refers to the donation made to Papanasi temple during the reign of Saluva Immadi Narasimha (A.D. 1490-1506), and incidentally confirms the statement of *Skanda-purana (Lepakshyah Papanasah)* and Papanasi temple unit came to being earlier than the main Virabhadrasvami temple assigned to Virupanna.

2. BRAHMI INSCRIPTIONS, GUNTUPALLE, DISTRICT WEST GODAVARI.—Four fragmentary inscriptions, engraved on flooring slabs and written in Prakrit language and Brahmi characters of about the first century A.D., were discovered in the cave at Guntupalle. One of them mentions a certain Mahadasa, who was resident of Mahanagapavata. Another mentions a certain *Arya* Dhamasena and his disciple (name lost). The remaining two are too fragmentary to yield any useful information.

3. INSCRIPTIONS, GUNTUPALLE, DISTRICT WEST GODAVARI.—One inscription engraved on a stone casket found in same cave is written in Prakrit language and Brahmi characters of about the third-fourth century A.D. It mentions one Karam (...........) described as the wife of Kumdi-gahapati and as the (mother) of Nakhamika. Another inscription, engraved on a plaque, found in the same cave, is written in Pali language and Brahmi characters of about the third-fourth century A.D. It contains a stanza on *dukha* or misery and on the eight-fold path (of Buddhism).

GUJARAT

4. COPPER-PLATES, SANJELI, DISTRICT PANCH MAHALS.—Three copper-plates (pl. XLVI) dated in the regnal years 3, 6 and 19, palaeographically belong to the late fifth or early sixth century A.D. The copper-plate bearing the third regnal year was donated when Torman was ruling and mentions the construction of a Vishnu temple by Viradhikya, the queen mother, when *Vishayapati Maharaja* Bhuta was ruling. It records various taxes that local market agreed to donate for the temple. The copper-plate of the sixth regnal year notes the donation of land to the same temple by *Maharaja* Bhuta. The other copper-plate mentions the donation of land to the same temple by Matradasa, the son of *Maharaja* Bhuta.

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[1]Information from : 1, 9, the Superintending Archaeologist, South-eastern Circle of the Survey; 4, Department of Archaeology and Ancient History, M. S. University, Baroda ; 5, 7, 8, the Director of Archaeology and Museums, Government of Karnataka ; 36, 37, 39-42, the Director of Archaeology, Government of Uttar Pradesh ; and the rest from the Chief Epigraphist of the Survey.

KARNATAKA

5. COPPER-PLATES, ITTAGI, DISTRICT BELGAUM.—The copper-plates (pl. XLVII) belong to the reign of Kadamba King Jayakesi I of Goa who ruled the area between A.D. 1050 and 1078. The record mentions his father Shastha II and grandfather Guhaladeva I. After extolling the great qualities of the king, the record mentions that the village Ittagi was inhabited by scholars proficient in Vedas, etc., and the controversy over the revenue jurisdiction of the village was put to an end in Saka 984 (A.D. 1062) by the King Jayakesi I who visited the village along with his minister to fix the boundary personally. Details of the various physical features of the boundary of the village are also provided. The record ends with the title of the king *Sri Melege Bhairava,* an epithet commonly known for this king. The text was composed by Visvarupa and engraved by Nagogi who not only wrote the text on the plates but also carved them.

6. CHALUKYA COPPER-PLATE CHARTER, NARIHALLA, DISTRICT BELLARY.—This charter (pl. XLVIII), discovered in the project area of the place, is written in Sanskrit language and Nagari characters. Dated Saka 969 (A.D. 1047) in the reign of King Ahavamalla (Somesvara I), it contains a detailed genealogy of the Chalukyas of Kalyana and records the grant of 300 *nivartanas* of land in Vegura-grama, made by the king from his camp near Kalyana in Mayurakhandika, on the occasion of *Makara-samkranti,* for renovation, worship and offerings to the Traipurusha temple at Ponnumguda situated in the Vilvola-vishaya and for feeding 200 students and teachers in various *sastras* in the same temple. The charter was written by Jayakara, the son of Prajnakara. This is the only copper-plate charter of this king discovered so far.

7. INSCRIPTION, DODDAMALAPURA, DISTRICT MYSORE.—This inscription in Kannada characters and language engraved on a slab in front of the Ganada Maramma temple, records that in the cyclic year *Hevilambi Samvat, Asvayuja, Su 2,* while *Sriman Mahamandalesvara* Achyuta Raya was ruling, Thimmarasayya gave the grant of the village Malapura to God, as per the instructions of the king.

8. KANNADA INSCRIPTIONS, HUGIYAM, DISTRICT MYSORE.—One of the inscriptions records that the God was consecrated in the Kasi Visvanatha temple in Salivahana Saka 997 (A.D. 1075), *Tharana Samvat.* Another inscription on the *prasada* of the temple records that in Salivahana Saka (A.D. 1172) the *prasada* pillar was installed. The name of the place is mentioned as Hogiya.

MADHYA PRADESH

9. COPPER-PLATES, BILASPUR, DISTRICT BILASPUR.—A set of three copper-plates obtained from the Collectorate, Bilaspur, by the South-eastern Circle of the Survey, is dated in the 8th regnal year of King Jayesvara of Pandava dynasty, and the grant records the gift of village Samgamagrama in Dakshina Rastra in Mekhala country to an individual. The seal and ring are in good condition and the grant is assignable to *circa* sixth century A.D.

10. COPPER-PLATE CHARTER, BURHIKHAR NEAR MALLAR, DISTRICT BILASPUR.—This is the first plate of a set containing the imprecatory portion in Sanskrit language in

box-headed characters of about the sixth century A.D. The regnal year of the king (name not given) is given as 57 and the charter was engraved by Nagadeva, son of Golayya.

11. PARAMARA COPPER-PLATE CHARTER, INDORE, DISTRICT INDORE.—This copper plate charter, originally found at Rajpur in District West Nimar and now preserved in the Museum of the place, belongs to the reign of *Paramabhattaraka Maharajadhiraja Paramesvara* Naravarmmadeva. Written in corrupt Sanskrit language and Nagari characters and dated in Vikrama 1177 (A.D. 1120), this charter ratifies the grant by the king of two villages by name Mahataha and Ambhastatha made by *Ranaka* Ranadhavaladeva ruling (Pu) rannapathaka-1040 to the Brahmana *Nayaka* Madhavadeva-Sarmma on the occasion of the Solar eclipse in the month of *Pausha* in Vikrama 1148 (A.D. 1091). The grant is stated to have been registered by *Mahakshapatala* Ku(nta)rya and Sri Jayebhandagara.

12. COPPER-PLATE CHARTER, INDORE, DISTRICT INDORE.—This copper-plate charter, now preserved in the State Museum of the place, belongs to the reign of *Maharajadhiraja Maharana* Arasiha (Arisimha II), the ruler of Udaipur. Written in local dialect and Nagari characters and dated in Vikrama 1827 (A.D. 1770), this charter records the grant of three villages to Ahalyabai Holkar by the king.

13. PARAMARA INSCRIPTION, KAMED, DISTRICT UJJAIN.—This inscription, in Sanskrit language and Nagari characters, is engraved on a stone bearing the sculpture of Garuda in a field. Dated in Vikrama 1140 (A.D. 1083) in the reign of *Paramabhattaraka Maharaja dhiraja Paramesvara* Udayadityadeva, it records the grant of 12 *varttanas* of land in Radaghatikagrama by Naravarmmadeva probably to Krishnadeva for maintaining a perpetual lamp.

ORISSA

14. INSCRIPTION OF MAHARAJA SATRUBHANJA, BHUBANESWAR, DISTRICT PURI.—This stone inscription, originally found at Asanhat in District Keonjhar and now preserved in the Museum of the place, belongs to the reign of *Maharaja* Satrubhanja of the Naga family. It is engraved below a sculpture of Sivatandavamurti. Written in Sanskrit language and Gupta characters of about the fifth century A.D., this inscription records the construction of a temple *[devqyatana)* by the king.

15. COPPER-PLATE CHARTER OF RANAKA DANARNNAVA, BHUBANESWAR, DISTRICT PURI.—This copper-plate charter was discovered at Gunupur in District Ganjam and is now preserved in the Museum. Written in corrupt Sanskrit and Kalinga characters of about the tenth century A.D., this copper-plate inscription is dated in the 10th regnal year of the king who is described as the son of Rajendravarman and his queen Kalyanavati. It records the royal grant of the two villages Jhari-grama and Junahila-grama, situated respectively in *Nayandi-vishaya* of *Ambavadi-mandala* and *Amaradi-vishaya,* to a Brahmana by name Deu.

16. COPPER-PLATE CHARTER OF RANAKA UDAYAKHEDI, BHUBANESWAR, DISTRICT PURL—This copper-plate charter was originally found at Vil Dora near Berhampur in District Ganjam and is now preserved in the Museum. Written in corrupt Sanskrit and

Kalinga characters of about the tenth century A.D., it records the royal grant of Kolatta-*agrahara* probably to four Brahmanas.

17. COPPER-PLATE CHARTER OF SANTIKARADEVA, BHUBANESWAR, DISTRICT PURI.—This copper-plate charter was discovered at Lokaiposi in District Dhenkanal and is now preserved in the Museum. It is dated in the 1st regnal year of the king who is endowed with the titles *Parama-Mahesvara, Maharajadhiraja Paramesvara* and is described as the son of Subhakara, as the grandson of Dharmmadeva and as the ruler of 18 *mandalas.* Written in Sanskrit language and Kalinga characters of about the eleventh century A.D., this copperplate inscription records the royal grant of the village Rakalla-grama situated in Lelebhija-vishaya to Vamanasvamisarmman, the son of Padmanabha.

18. COPPER-PLATE CHARTER OF MAHARAJA NARENDRADHAVALA, BHUBANESWAR, DISTRICT PURI.—This copper-plate charter whose exact findspot is not known, is now preserved in the Museum. Written in corrupt Sanskrit and Kalinga characters of about the eleventh century A.D., this copper-plate inscription records the grant of a village to a Brahmana. It seems to be dated in the year 289, probably of the Bhaumakara era.

19. COPPER-PLATE CHARTER OF NAYAPALADEVA, BHUBANESWAR, DISTRICT PURI.—This copper-plate charter, originally found at Kalanda in District Balasore and now preserved in the State Museum of the place, is written in Sanskrit language and Nagari characters of about the eleventh century A.D. It is dated in the 14th regnal year of the king and records the grant of the village Kalavadraka to a Brahmana. This is the second copper-plate inscription of Nayapaladeva discovered so far, the other being the Irda copper-plate grant.

TAMIL NADU

20. INSCRIPTION, TALAIKKANANCHERI, DISTRICT CHINGLEPUT.—This damaged ins cription in Tamil characters of about the tenth century is engraved on a granite *pattika* around the central shrine, excavated from a mound. It seems to be dated in the reign of Parthivendravarman and records the assignment of lands for *Sribali* and lamps to Tirumerralidevar by *Adigal* Tarani Vichchadiran (Dharani Vidyadharan) of Urrukkadu on the south bank of the Kaveri in Chonadu.

21. VERSE INSCRIPTION, CHENGAM, DISTRICT NORTH ARCOT.—This Sanskrit inscription, in Grantha characters of about the thirteenth century, refers to the construction of *mani-mandapa* and *upavana* by Khadgamalla, also called Karavalamalla (Kopperunjinga?) for the deity at Sonachalendranilaya and mentions his vassal Gangeya. The latter is stated to have excavated a tank, constructed a *mandapa* and gifted a temple-car to the deity.

22. INSCRIPTION, KURANGANILMUTTAM, DISTRICT NORTH ARCOT.—Engraved above one of the entrances into the *maha-mandapa* in the Valisvara temple in the village, this inscription, in Tamil characters of about the twelfth century, calls the stone temple by the name Vikramasolan.

23. RASHTRAKUTA PILLAR-INSCRIPTIONS, KURANGANILMUTTAM, DISTRICT NORTH ARCOT.—Of the two Tamil inscriptions engraved on the pillars of the rock-cut Trimurti

cave temple in the village, the first, dated in the 24th regnal year (A.D. 963-64) of the king Kannara, the conqueror of Kachchi and Tanjai, records a tax-free gift of land by the administrative body *Ur* of Pallavapuram in Erikilnadu, a sub-division in Kaliyur-kottam for food offerings to the deity (Tiruvadigal) in the temple called Kalmandagam. The second inscription, dated in the 25th regnal year of the same monarch, records a gift of 90 sheep by somebody (details lost) for maintaining lamps in the said temple.

24. CHOLA INSCRIPTIONS, NEMALI, DISTRICT NORTH ARCOT.—Of the two Sanskrit verse inscriptions engraved in Grantha characters of the eleventh century on the walls of the Punnagesvara temple the fragmentary one, contains an eulogy on Jnanasambhu and refers to *Vadivarendra* Durggadhinandi of Gauda and to the court of the Chalukya king. The other, dated in the tenth regnal year (A.D. 1020-21) of Chola Rajendra I, records the grant of land to Premanesa *alias* Cholamuvenda-taksha by the great preceptor of Rajendra. The *sthapati* is said to have constructed the temple at Punna *alias* Aratikulantaka-agrahara.

25. CHOLA INSCRIPTION, VANIYAMBADI, DISTRICT NORTH ARCOT.—Dated in the sixth year (A.D. 1076) of Kulottunga I, this inscription records the gift of 6 *kalanju* and *manjadi* of *pon* and a flower-garden as *devadana* to provide for the deity Virundin-devar for the various services (specified) on stipulated days from the interest of the gold deposit made by Kundur Mutta Cheranarayana Kramavittan, one of the *alunganattar* of the place.

26. CHOLA INSCRIPTION, KULAMANGALAM, DISTRICT PUDUKKOTTAI.—This damaged Tamil inscription, dated in the 37th regnal year (A.D. 1215) of Kulottungachola III, records a sale of land by certain individuals of Panaiyur in favour of the deity Tiruvoru-kalisvaram-udaiyar in Kulamangalam in Pandikulasani-valanadu.

27. CHOLA INSCRIPTION, NARTTAMALAI, DISTRICT PUDUKKOTTAI.—This Tamil ins cription, dated in the 45th regnal year of Kulottungachola I (A.D. 1070), records that the assembly of the merchants *(nagaram)* of the locality Telungakulakalapuram in Annalvayil-kurram included in the Irattapadikondasola-valanadu, made an endowment of a field in favour of the deity Karumanikkalvar of the temple Tirumerkoyil of their own locality, and conferred the right to cultivate the same on Devan Periyan *alias* Mudikondasola-Telungaiyarayan to provide daily the food offerings.

28. INSCRIPTION, GINOEE, DISTRICT SOUTH ARCOT.—Engraved in characters of about the fifteenth-sixteenth century, this Tamil inscription records, in a verse, composed by one Hariharaputran, that by adding the number 3179 to the number of a given expired year of the Saka era, one may get the corresponding year of the Kali era.

29. PALLAVA FOUNDATION INSCRIPTION, PANAMALAI, DISTRICT SOUTH ARCOT.—Formerly partly covered by the additions of subsequent age and hence partly published {*Epigraphia Indica,* vol. XIX, pp. 113 ff.), but now fully exposed by the conservation work of the Survey, this Sanskrit inscription written in the Pallava Grantha characters of about A.D. 700, all around the base of the Talagirisvara temple, Panamalai, belongs to the time of the Pallava king Rajasimha (Narasimhavarman II: A.D. 700-28). It traces the origin

of the royal family from the Creator of the World, endows the king with the title *Mahesvarachudamani* and prays for the god Mahesvara's presence in the temple, named herein as Mahesvarachudamani-Pallavesvara, constructed by him.

30. PANDYA INSCRIPTION, TIRUPPULLANI, DISTRICT RAMANATHAPURAM.—This Tamil inscription, from the Jagannathasvami temple in the village, dated in the 13th regnal year (A.D. 1274-75) of Jatavarman Sundarapandya, records that the authorities of the temple of the deity Deyvachchilaipperumal at Tiruppullani in Sembi-nadu received the village Veludiyur, as a tax-free gift from Mayilerum-perumal *alias* Udaiyar Tondaimanar of Kalattur *alias* Nalkirttinallur in Sevvirukkai-nadu and undertook to meet the expenses of various food offerings to the deity and consort Pumelirundar of the temple during: (1) the daily evening twilight worship, named *Mudalil-venran sandhi;* (2) the monthly bathing of the deities on the days of Uttirattadi, the donor's natal star; and (3) a festival in the month of *Arpasi* (September-October), the month of the donor's birth.

31. CHOLA INSCRIPTION, SENGALIPURAM, DISTRICT THANJAVUR.—Dated in the 4th regnal year of Kulottunga III (A.D. 1178-1218), this fragmentary Tamil inscription seems to record an undertaking made by the Siva-brahmanas of the temple of the deity Rajendra-Cholisvara at Jayasimhakulakalapuram to burn a lamp in the temple by receiving 1400 *kasu* from two brothers, the name of the younger being Kulottungasolapalan.

32. PALLAVA INSCRIPTION, SENGALIPURAM, DISTRICT THANJAVUR.—Dated in the 3rd regnal year of the king Vijaya Nandivikrama-varman (Nandivarman III: A.D. 846-69), this Tamil inscription, engraved on a pillar now set up in the Ranganatha temple in the village, records a gift of land by Sadaiyan Attimallan of Simmalli in Idutalainadu to provide for food offerings daily at the time of the mid-day worship, to the deity Tirukkalisvarattu Mahadeva at Nallur, a *brahmadeva* village in the same *nadu.*

33. TAMIL INSCRIPTION, SENGALIPURAM, DISTRICT THANJAVUR.—This inscription, dated in the cyclic year *Bhava* (probably A.D. 1514-15), records a gift of five house-sites by the weaver Alliappan, son of Suradevan of Krishnadevarayapuram alias Jayasimhakula kalapuram, to the temple of the god Kannuganda-nayinar.

34. CHOLA INSCRIPTION, TIRUPPANAIYUR, DISTRICT THANJAVUR.—This Tamil inscrip tion from the Saundaresvara temple, dated in the 7th regnal year (A.D. 1152-53) of Rajaraja II, records the creation of an endowment of land as *madappuram* for the maintenance of a devotee residing in a cave *(guhai)* on the western side of the residential quarters around the temple of Alagiya-nayanar by Adum-virichadaiyan of Tiruttondattugaimangalam in Tiruvarur-kurram.

35. CHOLA INSCRIPTION, VENGALAM, DISTRICT TIRUCHCHIRAPPALLI.—This Tamil inscription, dated in the 5th regnal year (A.D. 1250-51) of the king Rajendrachola III, records the gift of income from specified toll taxes on the loads of merchandise in favour of the deity Rajarajesvaramudaiya-nayanar, at Venkulam by the guild of the merchant community *(padinen-bhumi-vanika-nagarattar),* obviously of the locality.

UTTAR PRADESH

36. INSCRIPTION, KANAUJ, DISTRICT FARRUKHABAD.—This Sanskrit inscription in Nagari characters of tenth-eleventh century A.D., on the pedestal of an image in Ajaypal temple at Kanauj, records a name Bhuvana Guru.

37. INSCRIPTION, KANPATIA, DISTRICT FARRUKHABAD.—This inscription in Nagari characters, found in Murari Devi-Ka-Mandir, engraved on the pedestal of the image of Mahavira, is dated V.S. 1109 (A.D. 1051-52) and belongs to the time of chaotic conditions before the advent of Gahadavala dynasty at Kanauj.

38. Two GAHADAVALA COPPER-PLATE CHARTERS, LUCKNOW, DISTRICT LUCKNOW.—These two copper-plate charters, now preserved in the State Museum of the place, were originally found at Asai in District Etawah. Both written in corrupt Sanskrit language and Nagari characters, belong to the reign of *Maharajadhiraja Paramesvara Parama-mahesvara* Jayachchandradeva. The first, dated Vikrama 1229 (A.D. 1172), records the grant of a field named Lahada on the orders of the king *Ranaka* Abhayapala to *Bhattaraka* Kedararasi-*pandita* for the god Somesvaradeva of Asati for the king's own merit as well as that of his parents. The second charter, dated Vikrama 1239 (A.D. 1183), records the grant of the village Vahadhovi in Payidhuka-pattala by *Ranaka* Amritapala on the orders of the king to *Bhattaraka* Nilakantha, the son of *Bhattaraka* Kedararasi for the king's own merit as well as that of his parents. This charter was composed by *Kayastha* Jagadhara and the engraver was the goldsmith *Thakura* Ghudahastika.

39. INSCRIPTION, ALMAPUR, DISTRICT SITAPUR.—This fragmentary Sanskrit inscrip tion in Kutila characters of seventh-eighth century A.D. is engraved on the back side of Siva-Parvati image.

40. INSCRIPTION, MUJAFFARPUR, DISTRICT SITAPUR.—This broken inscription in three pieces written in Sanskrit language and Kutila characters of seventh-eighth century A.D. is engraved on the back side of Siva-Parvati image.

41. INSCRIPTION, BAJINGA, DISTRICT TEHRI-GARHWAL.—This inscription, engraved on a grey sandstone slab, in Nagari characters of tenth-eleventh century A.D., records a name Sri Kumara Sharmana Karadi.

42. Two INSCRIPTIONS, KOTHAR, DISTRICT TEHRI-GARHWAL.—Two inscriptions, in Brahmi script assignable to sixth century A.D., found engraved on two grey sandstone slabs, contain ten and eight lines respectively.

WEST BENGAL

43. INSCRIPTION OF NAYAPALA, SIYAN, DISTRICT BIRBHUM.—This damaged inscription was discovered in the *dargah* of Makhdum Shah Jabal of the place. It is written in Sanskrit language and Nagari characters of about eleventh century A.D. and belongs to the reign of the king Nayapala. It records the construction of several temples, monasteries etc., and the making of the images of gold and silver, probably by the king. It also refers to the king's victory against the forces of the Chedi king Karna.

ARABIC AND PERSIAN INSCRIPTIONS[1]

GUJARAT

1. INSCRIPTIONS OF THE TUGHLUQS, DISTRICT BROACH.—In a published record, dated A.H. 726 (A.D. 1326) in the reign of Muhammad bin Tughluq from Broach, the wrongly read *nisba* of the builder, Maliku'sh-Sharq Fakhrud-Daulat Wa'd-Din Daulat Shah Muhammad, and the name of the scribe which was not read were found, on re-examination, to be Butahari and Kamal respectively.

2. INSCRIPTIONS OF THE SULTANS OF GUJARAT, DISTRICTS BROACH, MAHESANA AND SURAT.—A new but unfortunately fragmentary record of Muzaffar Shah was found at Surat. Purporting very probably the construction of a mosque, it is on palaeographical grounds assignable to the time of Muzaffar Shah I.

A record purporting the construction of a mosque in A.H. 812 (A.D. 1409) under orders of Sultan Ahmad Shah by Pir Murad Shah was found at Kheralu; it appears, on palaeographical grounds, to have been set up at a later date. A published record dated A.H. 862 (A.D. 1457-58) in the time of Mahmud Shah I from Broach, which was incompletely read was deciphered completely and found to record the name of the father of Malik Fathu'llah, at whose instance a mosque was completed, was Malik Khidr and the mosque known of old as Khimli. In another published record from the same place, the name of a famous Gujarat nobleman under Bahadur Shah was wrongly read as Ulugh Khan instead of Alp Khan as is found on re-examination.

3. INSCRIPTION OF MUGHALS, DISTRICT MAHESANA.—A new inscription of the time of Aurangzeb, found at Vadnagar, assigns the construction of a mosque to Sayyid ʿAli, son of Sayyid Pyara, in A.H. 1096 (A.D. 1684).

4. MISCELLANEOUS INSCRIPTIONS, DISTRICTS BROACH, MAHESANA, SURAT AND VADODARA (BARODA).—Re-examination of two published epitaphs from Haldarva, District Vadodara (Baroda), dated A.H. 700 (A.D. 1301) and A.H. 706 (A.D. 1306) have yielded adh-Dholaqi (i.e. of Dholka) as the *nisba* of the two deceased members of a Khatib family.

An inscription from Vankaner, same District, records the death of Bibi Saliha in A.H. 949 (A.D. 1542). A published metrical epitaph from Broach containing errors of reading including that of the date given in figure and supported by a chronogram was re-examined. Recording the death of a lady of note which occurred in A.H. 972 (A.D. 1563-64), it is composed and inscribed in a masterly hand by Muhammad, the Khattat (Calligraphist). A record from Vadnagar states that the Arjan-Bari (gate) was rebuilt to ensure protection of the inhabitants in A.H. 1042 (A.D. 1633) when Islam Khan was the Qadi (i.e. governor) of the province; in its published version the object as well as purpose of its construction were not correctly stated. Another epitaph, from Surat, records the demise of Bulaqi Begum daughter of Baba Khwaja in A.H. 1054 (A.D.1644). A published

[1]Dr Z. A. Desai, Superintending Epigraphist for Arabic and Persian Inscriptions of the Survey, assisted by Dr A. A. Kadiri, Senior Epigraphical Assistant, Sarvashri M. F. Khan and S. S. Hussain, Epigraphical Assistants, found, copied, examined and reported on three hundred and eighty-five inscriptions during the year. Of these, impression of one estampage from Vadodara (Baroda) was received from Shri N. M. Ganam of the Western Circle of the Survey. The important ones of these are noticed here.

epigraph from the same place, recording the construction of a mosque in A.H. 1092 (A.D. 1681) provides an early instance of the designation Babu'l-Haramain (gate to the Holy cities of Mecca and Madina) by which Surat was known. A record from Vadnagar assigns the construction of a mosque in A.H. 1095 (A.D. 1683) to Sayyid Muhammad, son of Sayyid Ni'matu'llah; it was inscribed by Kamal Muhammad,son of Sharif Muhammad. A metrical inscription, from Broach, composed by Madhav, records the construction of a well by Lai Das, son of Tai Gob(v)ardhan in A.H. 1100 (A.D. 1698-99); in its earlier published Text, the name of the builder was not deciphered. An interesting record from Vadodara (Baroda) contains the text of a Will made by Sayyid Hidayatu'llah, son of Sayyid 'Abdu'l Fattah in A.H 1104 (A.D. 1693), affirming that the deponent owned an inherited property consisting of 4 *kunba* rent-free land, situated outside the royal citadel, outside the city next to the Lahripura gate near the Chandan tank and containing a mosque constructed by his grandfather, that he bequeathed this property except the mosque and (earned) property consisting of (?) five *kunba* of land at Hamidpur, nine-ten shops, four houses and one cell of Jacha Mai built by him, to his only son Bara Miyan stipulating that his descendents would hold it in perpetuity and have a right to gift it away or make an outright sale (the only condition being that) the mosque would be properly maintained by him and his descendents. An inscription on a wooden medallion recording the construction of a gate in A.H. 1206 (A.D. 1791-92) and inscribed by Sadiq, the Polisher of precious stones *(hakkak)* was found at Surat. An epitaph of Liyaqat, the Khwaja Sara, who died in A.H. 1206 (A.D. 1791-92) was also found at the same place.

HARYANA

5. INSCRIPTIONS OF THE TUGHLUQS, DISTRICT HISSAR.—A briefly-noticed badly damaged inscription from Fatehabad, of which some portions are totally effaced rendering its exact purport difficult to be determined, seems to contain the text of some sort of memorial (?) notice put up by Firuz Shah Tughluq which is prefaced by a brief account of his predecessors and their conquests and the circumstances under which the founder of the line Ghiyathud-Din Tughluq Shah came to occupy the throne, Muhammad bin Tughluq Shah succeeded him and the last-mentioned himself nominating Firuz Shah. It also seems to refer to the Mughals (i.e. Mongols) and mention their Chiefs Tarma Shirin and Iqbal. Further mentions Khwaja Jahan the Prime Minister (Wazir-i-Mamalik) and seems to refer to a place called Ahmadabad. It places the death of Tughluq Shah on the last day of Rajab of A.H. 725 (A.D. 1325), and the accession of Muhammad bin Tughluq Shah as 1st Sha'ban A.H. 725 (A.D. 1325), and specifies the period of their rule respectively as 4 years and 2 months and 26 years 5 months and 21 days.

JAMMU AND KASHMIR

6. INSCRIPTIONS OF THE MUGHALS, DISTRICT SRINAGAR.—A hitherto-unnoticed inscription of the time of Akbar from Srinagar records the construction of the fort of Nagar m his 44th regnal year i.e. A.H. 1006 (A.D. 1597-98), at a cost of one crore and ten lakhs (rupees?) by 200 Indian master masons who were sent by the emperor. The work was carried out under the supervision of Khwaja Muhammad Husain. A new epigraph of Aurangzeb from the same place occurring on the gate of a compound states that a Khanqah (saintly establishment), a mosque and a Ghar (lit. Cave) were built through the efforts of Miyan 'Abdu'r-Rashid Qadiri Chikan-Posh in A.H. 1060 (A.D.

1650) and that four decades later the emperor had sent 550*purni* (?) to meet the expenditure on lighting and the free-kitchen, etc. (of the same saintly establishment).

7. MISCELLANEOUS INSCRIPTIONS, DISTRICTS ANANTNAG, BARAMULLA AND SRINAGAR.—Two epitaphs from Srinagar furnish names of the fifteenth century saint Muhammad al-Madani, a resident of Kashmir and his son Yahya. At Srinagar was also found a damaged small loose slab which is inscribed with the words Humam Hakim-i-Shahi (i.e. Humam, the royal physician). Another epigraph from the same place recording the repairs carried out under the supervision of Haji Aqa Sayyid Ahmad al-Musawi as-Safavi, the Alamul-Ulama to the Deorhi of the Astana (i.e. Dargah) of Mir Shamsud-Din Sayyid Muhammad 'Iraqi in A.H. 1362 (A.D. 1943) gives the date of the original construction of the Astana as A.H. 910 (A.D. 1504-05) and states that the saint, who was born in Iran in A.H. 861 (A.D. 1457), died in A.H. 932 (A.D. 1525-26).

A new inscription (pl. XLIX A), also from Srinagar, assigns the construction of a Bath (Hammam) and a mosque to Sultan Dara Shukun in A.H. 1059 (A.D. 1649). Another record from Srinagar assigns the construction of a bridge to Saif Khan in A.H. 1081 (A.D. 1670-71). Two more inscriptions from the same place record the construction of a bridge in A.H. 1085 (A.D. 1674-75) by Mahesh (son of) Shankar Das Ghaudhary; it was completed in A.H. 1086 (A.D. 1675-76.). Another epigraph from same place also assigns the construction of a bridge to Mir Ahmad in A.H. 1093 (A.D. 1682). Another inscription from Tral, District Srinagar, records the construction of the Khanqah of Shah Hamdan in A.H. 1106 (A.D. 1694-95). One more epigraph from the same place records the construction of Khanqah-i-Gilani in A.H. 1182 (A.D. 1768-69). At Srinagar was found an inscription which assigns the reconstruction of the Rauda (Mausoleum) of Sayyid Madani to Hafiz Ghulam Haji in A.H. 1191 (A.D. 1777).

Apart from the above, a large number of interesting epitaphs were found at Bijbahara, District Anantnag, Baramulla and Srinagar. Ranging in dates between the fifteenth and ninteenth centuries, they refer to men of different vocations, including saints and officials. The most interesting of these, perhaps, is an epitaph from Srinagar which records the demise of the wife of Sultan Zainul-Abidin in A.H. 856 (A.D. 1452). Another epitaph from the same place registers the death of Amirzada Hasan Mir son of Mir Husain in A.H. 898 (A.D. 1492-93). A third epitaph, also from Srinagar, is a death-record of Fath Khan, son of Mir Darwish 'Arab Baghdadi who died in A.H. 1011 (A.D. 1602). A fourth epitaph from Srinagar mentions Daniyal the Second, referred to in the text as Lord *(Khundaygan)* as having died in A.H. 1048 (A.D. 1638-39). Another epitaph from the same place records the death of Mir Sultan, who was the Kitab-Khwan (i.e. Book-Reader); he died in A.H. 1068 (A.D. 1657-58). Other epitaphs from Srinagar include those of Malik Muhammad Khan, dated A.H. 1037 (A.D. 1627-28), 'Abdu'r-Rahim Khan, dated A.H. 1059 (A.D. 1649), Husain Baig, dated A.H. 1072 (A.D. 1661-62), Parwaz Baig, son of Ilyas Baig and Aman Quli Baig, son of Sher Baig Kurd Mukri, dated A.H. 1074 (A.D. 1663-64) and Mir Sadi, dated A.H. 1098 (A.D. 1686-87). A modern inscription from Srinagar contains a list of Mughal princesses—daugthters of Mughal emperors and of prominent Ghaghatai grandees who were married into the well known family of Naqshbandiya saints and buried in the family Mausoleum; the list stated to have been based on the *Tuhfa-i-Naqshbandiya.*

KARNATAKA

8. INSCRIPTION OF THE 'ADIL SHAHIS, DISTRICT BIJAPUR.—A published record from

Bijapur of the reign of Muhammad Shah which was incorrectly deciphered was found to state that the building (of the granary on which it appears) was constructed in A.H. 1059 (A.D. 1649) by Aqa Khusraw who was appointed to the post of supplies *(ratib)* by the king.

9. MISCELLANEOUS INSCRIPTIONS, DISTRICT BIJAPUR.—A couple of inscriptions in stucco from Afzalpur record the name of the tomb on which it appears as *Rauda-i-Afdal,* i.e. Tomb of Afdal (Khan) and give the date, apparently that of construction, as A.H. 1069 (A.D .1658-59). An interesting but undated record from Bijapur identifies the spacious building on the gate of which it is fixed as the mansion of Ikhtiyar Khan Gujarati, Ibrahim 'Adil Khani; he was a prominent 'Adil Shahi nobleman of the sixteenth century.

MAHARASHTRA

10. INSCRIPTION OF THE MUGHALS, DISTRICT AURANGABAD.—A badly damaged epigraph, from Aurangabad, records the repairs of a well carried out by Sultan, son of Hizbir Khan in Khujista Bunyad Aurangabad in the 4th regnal year of Shah 'Alam corresponding to A.H. 1177 (A.D. 1763-64).

11. MISCELLANEOUS INSCRIPTION, DISTRICT RATNAGIRI.—An inscription from Yeshvi records the construction of the local Jami Mosque in A.H. 930 (A.D. 1524).

UTTAR PRADESH

12. INSCRIPTIONS OF THE MUGHALS, DISTRICTS DEHRA DUN, ETAWAH AND HARDOI.—A damaged inscription of the time of Akbar was found at Mallawan, District Hardoi. It records the construction of a mosque; its date portion is missing. Another badly damaged inscription from the same place records the construction of a well during the reign of the same emperor; its portion containing the builder's name and the date has completely peeled off. A bilingual inscription from Ajitmal, District Etawah, belonging to the reign of Shah Jahan, of which a brief and misleading notice was given in the District Gazetteer was found on re-examination to purport the completion of a *Sarai* by Ajitmal Kayat (i.e. Kayastha) in the 14th year of the emperor's accession, corresponding to A.H. 1051 or Samvat 1698 (A.D. 1641-42).

An inscription from Dehra Dun (pl. XLIX B) of the time of Aurangzeb details the circumstances of the foundation of a Guruwara there after the death of Guru Ram Rai in the 31st regnal year of the emperor corresponding to A.H. 1099 (A.D. 1688) and Samvat 1744. It furnishes information regarding the visit of the Guru to the royal court, his stay at the capital, return to his native place, grant of villages by the Raja of the hills for him, his marriage, and the construction by him of a building and laying out of the gardens which became a place of pilgrimage.

13. MISCELLANEOUS INSCRIPTIONS, DISTRICT HARDOI.—An inscription from Bilgram recording the construction of the tomb of Sayyid Muhammad in A.H. 1151 (A.D. 1738-39) by Sayyid Muhammad Muhsin, son of Sayyid Muhammad Said, states that the former had conquered Bilgram, in A.H. 614 (A.D. 1217-18), and died in A.H. 645 (A.D. 1247). In an epitaph from Sandhi, the deceased Haji 'AH Khan who passed away in A.H. 1159 (A.D. 1746-47) is referred to as a great Khan.

WEST BENGAL

14. INSCRIPTION OF THE SULTANS OF BENGAL, DISTRICT MURSHIDABAD.—A published inscription from Chuna Khali (pl. XLIX C) believed to have been one of the two records of Nasiru'd-Din Mahmud Shah II of Bengal was examined. It was ascertained to be the record of Saifud-Din Firuz Shah. It records the construction of a mosque by Majlis Barbak in A.H. 896 (A.D. 1490).

15. MISCELLANEOUS INSCRIPTIONS, DISTRICT MURSHIDABAD.—An epitaph from Murshidabad records the death of Hakim (i.e. Physician) Muhammad 'Askari al-Husaini of Akbarabad (i.e. Agra) in A.H. 1207 (A.D. 1792). At the same place was found an inscription in Persian as well as in English, stating that Miyan Muhammad Hilal, the keeper of the jewels of the Nawwab Nazim's palace, died in A.D. 1802. According to another record from the same place, he had built a mosque in A.H. 1216 (A.D. 1801-02).

. NUMISMATICS AND TREASURE TROVE

GUJARAT

1. BRONZE IMAGE AND YANTRA, MANDAL, DISTRICT AHMADABAD.—Five bronze images and one *yantra* were recovered from a well and are in the process of acquisition under the Treasure Trove Act.

2. SILVER COINS, NESDI, DISTRICT BHAVNAGAR.—A hoard comprising thirty old silver coins have been found at Nesdi.

3. PUNCH-MARKED COINS, RANGPUR, DISTRICT JAMNAGAR.—A hoard consisting of four hundred and eighty punch-marked coins was found at Rangpur.

MADHYA PRADESH

4. COPPER COINS, FORT GWALIOR, DISTRICT GWALIOR.—Seven copper coins belonging to the Muslim rulers and a copper coin bearing the date *Samvat* 1926 (A.D. 1869) were found inside Gwalior fort.

5. MISCELLANEOUS COPPER COINS, PAWAYA, DISTRICT GWALIOR.—Eighteen Naga copper issues and four Indo-Islamic coins were collected from Pawaya.

6. COPPER COIN, SANCHI, DISTRICT RAISEN.—A punch-marked copper coin was found in the vicinity of a *stupa* at Sanchi.

MAHARASHTRA

7. KSHATRAPA COINS, RANJANGAON, DISTRICT PUNE.—An earthern pot containing one thousand five hundred and eighteen silver coins of Kshatrapas, besides a copper coin of Rudrasena II, was discovered by a villager Bhiku Khedkar while digging his field at Ranjangaon.

RAJASTHAN

8. MUGHAL COINS, CHITTAURGARH, DISTRICT CHITTAURGARH.— The District Magistrate obtained twenty-six silver coins, issued by the Mughal rulers as treasure trove find.

9. MUGHAL COINS, DUNGARPUR, DISTRICT DUNGARPUR.—A hoard of one hundred and ten silver coins of Mughal rulers is under the process of acquisition.

10. LATE MUGHAL COINS, BAGRU, DISTRICT JAIPUR.—Thirty-four silver coins issued by the late Mughal rulers were found at Bagra.

11. BRITISH COINS, JAIPUR, DISTRICT JAIPUR.—Seven silver coins were acquired by the Additional District Magistrate Jaipur, as treasure trove find.

12. LATE MUGHAL COINS, BAJUPARA, DISTRICT JAIPUR.—One hundred and fourteen silver coins of late Mughal rulers were found at Bajupara.

13. BRITISH COINS, DAUSA, DISTRICT JAIPUR.—Six silver issues of Edward VII and George V were obtained by the Munsif Magistrate, Dausa, as treasure trove.

14. MISCELLANEOUS SILVER COINS, JAIPUR, DISTRICT JAIPUR.—One hundred and twenty-eight coins of late Mughal rulers, five of Victoria, and one coin of George V were acquired as treasure trove finds.

15. LATE MUGHAL COINS, DANGIPURA, DISTRICT JHALAWAR.—A treasure consisting of one hundred and thirty-seven silver coins of late Mughal rulers was acquired from Dangipura as treasure trove find.

16. BRITISH COINS, JAJUSAR, DISTRICT JHUNJHUNU.—Under the Treasure Trove Act, fourteen coins of Victoria, seven of Edward and thirty-three of George VI in silver, were obtained from Jajusar.

17. MISCELLANEOUS COINS, JODHPUR, DISTRICT JODHPUR.—A hoard comprising coins of Akbar, eight gilt issues of George VI and one British African penny of debased silver was acquired under the Treasure Trove Act.

18. MISCELLANEOUS COINS, KOTA, DISTRICT KOTA.—A hoard comprising fifteen coins of Mohammad Shah, two of Edward VII, two of George V, sixty-seven of George VI was obtained as treasure trove.

19. MUGHAL COINS, KOTA, DISTRICT KOTA.—A hoard of one hundred and fifty coins variously issued by Aurangzeb, Muhammad-Shah, Shah Alam, Farrukhsiyar and various states of Rajasthan was acquired as treasure trove.

20. MISCELLANEOUS SILVER COINS, KARIRI, DISTRICT SAWAI MADHOPUR.—Six coins of Shah Alam and forty local coins were obtained from Kariri in the treasure trove.

21. MUGHAL COINS, BACHHERA, DISTRICT TONK.—One hundred and sixteen silver coins variously issued by Aurangzeb, Farrukhsiyar, Jahandar Shah, Muhammad Shah and Shah Alam were found in a treasure trove.

22. VICTORIA COIN, MALPURA, DISTRICT TONK.—Two silver coins of Victoria (A.D. 1889-1900) were acquired by the Sub-Divisional authority as treasure trove.

UTTAR PRADESH

23. MUGHAL COINS, PACHOHA, DISTRICT BANDA.—Thirty-six silver issues of the Mughals were received as treasure trove finds.

24. MEDIEVAL COIN, TANDA, DISTRICT FAIZABAD.—A hoard containing two hundred and five silver coins of Pathan rulers was obtained.

25. VICTORIA COINS, EKARI, DISTRICT FATEHPUR.—Seven hundred and thirty-two silver coins of Victoria were discovered at Ekari.

26. MUGHAL COINS, SARAI CHIBRA, DISTRICT PRATAPGARH.—Thirty-nine silver coins issued by the Mughal rulers were acquired.

27. MUGHAL COINS, RIHAWA MAHARAJGANJ, DISTRICT GORAKHPUR.—A hoard containing one hundred and twenty coins of the Mughals was obtained.

IV. OTHER IMPORTANT DISCOVERIES

BIHAR

1. EARLY HISTORICAL SITE, BRAHMPUR, DISTRICT DARBHANGA.—Shri B. S. Jha of the Survey discovered an early historical site yielding grey, red and black wares at Brahmpur.

2. BUDDHIST TEMPLE AND SCULPTURES, BESBAK AND TIURI, DISTRICT NALANDA.—Shri B. Nath of the Survey noticed remains of a Buddhist temple and images of Buddha, Uma-Mahesvara, Vishnu, etc. He also discovered a huge black stone image of Buddha in *bhumisparsa-mudra* at Tiuri.

3. ANCIENT SITE, DEOMACKANDEY, DISTRICT ROHTAS.—Shri D. P. Sinha of the Survey collected from an ancient mound at Deomackandey, sherds of the N.B.P., black-and-red, grey or black-slipped wares, besides historical pottery, belonging to Gupta and succeeding periods. He also noticed several Brahmanical sculptures.

4. STONE SCULPTURES, SIMRIA-BHINDI, DISTRICT SAMASTIPUR.—Sculptures of Vishnu and eight-armed Durga, datable to late Pala period were discovered by Shri B. S. Jha of the Survey.

GUJARAT

5. HARAPPAN SITES, DISTRICT AHMADABAD.—Shri K. D. Tripathi of the Survey discovered Harappan settlements at Matewal-No-Tekro, near Pandana, in Taluk Dhandhuka, Malasaratalavdi, near Gudi, and Tarshikhad, near Jawaraj, in Taluk Dholka.

6. SCULPTURE, JUNAGADH.—A fragmentary image of *salabhanjika,* carved on sand stone, was discovered at Junagadh.

7. HARAPPAN SEAL, KOTDA, DISTRICT KUTCH.—A Harappan seal was collected by the Sarpanch from a mound named Kotda, near village Dhola-vira.

8. MEDIEVAL DEVI IMAGE AND LATE SCULPTURES, SUN TEMPLE, MODHERA, DISTRICT MAHESANA.—A medieval image of Annapurna along with nearly hundred figures of male and female votaries, commonly holding flowers and *kalasa,* in marble and schist, were recovered from the Suryakund, attached to the Sun temple. These figures are probably hundred years old.

9. GOLD AND SILVER ORNAMENTS, PAVAGADH, DISTRICT PANCH MAHALS.—One bangle-shaped ear ornament of gold and three silver ornaments i.e. girdle, armlet and anklet were found during the conservation work of Gebanshahni-Vav.

10. RUINED SARAI, DOSVADA, DISTRICT SURAT.—Shri N. M. Ganam of the Survey discovered a ruined caravan *(sarai)* of the late Mughal Period with arched cells on its three

side walls and an archway in the front. Inked inscriptions in Arabic and Persian found in the niches of the cells indicate itineraries of the visiting travellers.

KERALA

11. ROCK-CUT CAVES, KALIKKADAVU, DISTRICT CANNANORE.—Eleven rock-cut caves, circular on plan, were discovered by the Director of Archaeology, Kerala, at Kalikkadavu.

12. VISHNU IMAGE, MANJASWAR, DISTRICT CANNANORE.—A four-armed Vishnu image in granite, datable to *circa* tenth century A.D. on stylistic grounds, was discovered by the Director of Archaeology, Kerala.

13. VISHNU IMAGE, PEELIKODE, DISTRICT CANNANORE.—A granite image of Vishnu, datable to *circa* fourteenth-fifteenth century, was discovered by the Director of Archaeology, Government of Kerala.

14. KUDAKKADU MULI, MARAYUR, DISTRICT IDIKKI.—Paintings in red ochre and kaolin paste were found by the Director of Archaeology, Kerala, in a cavern.

15. BUDDHA IMAGE, RAMAPURAM, DISTRICT KOTTAYAM.—A damaged Buddha image, datable to *circa* ninth century A.D., was discovered by the Director of Archaeology, Govern ment of Kerala.

16. ROCK-CUT CAVE, KOTTILANGADI, DISTRICT MALAPPURAM.—A rock-cut cave, measuring 2'25 m east-west, was discovered by the Director of Archaeology, Kerala.

MADHYA PRADESH

17. GUPTA TERRACOTTA, PAWAYA, DISTRICT GWALIOR.—A mutilated terracotta figurine of a four-armed male deity (pi. L A) of Gupta period was discovered by Shri B. S. Vyas of the Survey.

18. KUSHAN SCULPTURE, BHERAGHAT, DISTRICT JABALPUR.—Shri C. B. Trivedi noticed a standing female sculpture (pi. LB), of the Kushan period, now removed to Chausauth-yogini temple at Beraghat.

19. PAINTED ROCK-SHELTER, KATNI, DISTRICT JABALPUR.—Findings of Shri V. S. Wakankar *{1956-57,* pp. 79-80) were confirmed by Shri C. B. Trivedi who noticed a number of painted rock-shelters at the village Jhingari. The cultural deposit in the neigh bouring area consists of microliths and Early Stone Age tools.

20. MEDIEVAL SCULPTURES, MANDHATA, DISTRICT EAST NIMAR.—Sarvashri C. B. Trivedi and Narayan Vyas of the Survey discovered sculptures of seated four-armed Narasimha, Brahma and Brahmani and two sculptures of Parvati at Gayasila. They also found *Sapta-matrika* sculptures, housed in the temple at Satamatara. A beautiful sculpture of Ganesa with his consort was also noticed by them at Kubera Bhandari.

21. PAINTED ROCK-SHELTERS, RAISEN.—Two groups of rock-shelters, locally known as Loharpura and Gadariatola, were discovered by Sarvashri C. B. Trivedi, Narayan Vyas

and K. G. Bhagchandani of the Survey, in the vicinity of Raisen. The rock-paintings are executed in white and red ochre. These range from the mesolithic to historical period.

22. EARLY STONE AGE TOOLS, ULDAN, DISTRICT SAGAR.—Tools made on quartzite were found from the bank of river Dhasan by Shri C. B. Trivedi of the Survey.

23. PARAMARA SCULPTURE, KARMASI-BADORA-RUSLI, DISTRICT VIDISHA.—A standing sculpture of Hanuman of the Paramara period was discovered by Shri A. P. Sagar of the Survey.

MAHARASHTRA

24. JAINA IMAGES, BORADI, DISTRICT DHULIA.—Shri S. A. Saliof the Survey noticed two inscribed Jaina *tirthankara* images in the compound of a High School.

ORISSA

25. SAPTA-MATRIKA TEMPLE, SATHALAPUR, DISTRICT CUTTACK.—A dilapidated *Sapta-matrika* temple was discovered by the Director of Archaeology, Government of Orissa.

26. LOOSE SCULPTURES, TANARA-MATHA, DISTRICT CUTTACK.—A few loose sculptures were noticed by the Director of Archaeology, Government of Orissa.

27. ANCIENT BUDDHIST SITE, KURUMA, DISTRICT PURI.—An ancient Buddhist site at Kuruma, near Konarak, was discovered by the Director of Archaeology, Government of Orissa.

28. BUDDHIST ANTIQUITIES, KOLANAPUR, DISTRICT CUTTACK.—Buddhist antiquities were collected from the Chitropala valley by the Director of Archaeology, Government of Orissa.

RAJASTHAN

29. SCULPTURAL FRAGMENTS, KERIAKALA, DISTRICT AJMER.—Two tarana-fragments of a Vishnu temple were found by the Curator, Government Museum, Ajmer.

30. SCULPTURES, BHARATPUR, DISTRICT BHARATPUR.—Stone image of *simha-vahini* Durga and a male-head of about the nineteenth century were discovered at Bharatpur by the Curator, Government Museum, Bharatpur.

31. MISCELLANEOUS SCULPTURES, DIG, DISTRICT BHARATPUR.—The Curator, Govern ment Museum, Bharatpur, found seven stone sculptures coasisting of an image of Ganesa, sculptured head of an elephant, both of *circa* twelfth century, two figures of a lion attacking an elephant belonging to the medieval period, a four-faced *Siva-linga* and two images of Nandi of the nineteenth century.

32. GARUDA IMAGE, MAGRUP, DISTRICT BHILWARA.—The Custodian, Government Museum, Chittaurgarh, found a Garuda image of the eleventh century.

33. EARLY MEDIEVAL SCULPTURES, CHITTAURGARH.—Shri S. Anand Sastry of the Survey noticed two figures of Parvati of about the seventh-eighth century inside the fort.

34. BRAHMANICAL SCULPTURES, BASSI, DISTRICT DUNGARPUR.—Images of Lakshmi-Narayana and Kartikeya of late medieval period were found by the Curator, Government Museum, Chittaurgarh.

35. STONE SCULPTURES, MANDORE, DISTRICT JODHPUR.—Damaged image of Mahishamardini, a panel depicting two standing male figures under a tree, a *mithuna* figure of about the eighth century and an image of Parsvanath, dated to Vikrama 1852, were discovered by the Curator, Government Museum, Mandore.

36. GANESA IMAGE, GHATIALA, DISTRICT JODHPUR.—Shri R. C. Agarwala, Director, Department of Archaeology and Museums, Rajasthan, reported the discovery of a mutilated image of Ganesa which once crowned the top of Ghatiya pillar of Vikrama 918 (A.D. 861).

UTTAR PRADESH

37. BALARAMA IMAGE, BAJNA, DISTRICT MATHURA.—A headless image of Balarama in red sandstone was examined and identified by Shri M. C. Joshi of the Survey. The interesting iconographic traits of this image are traces of serpent-hood at the back and cup in one of the hands of the standing deity.

38. MEDIEVAL TEMPLES AND SCULPTURES IN DISTRICT PITHORAGARH.—Shri M. C. Joshi of the Survey found remains of some medieval temples at Devidhura. Of these, the finest one was a small Devi temple (2.60 x 2.5 m) with *sala-sikhara* (height 3.10 m) built within a huge cracked boulder. It is crowned with *sardula* figures and has a Ganesa flanked by flying figures above the entrance. Stylistically, it seems to belong to the tenth century A.D. Inside the shrine, is a small sculpture of Devi (probably Parvati) which does not appear to be the original image of the presiding deity. Outside this temple on the slope stand remains of a few *devakulikas,* with stylized *nagara-sikharas* datable to *circa* fourteenth or fifteenth century A.D. In one of them were found loose sculptures of Siva, Parvati and Mahishamardini. A late medieval *naula* ('covered-spring') was also located near Devidhura, close to the Lohaghat-Devidhura road.

39. MONOLITHIC PILLAR, AKTHA, DISTRICT VARANASI.—Shri B. Nath of the Survey discovered an unpolished monolithic pillar of red sandstone.

WEST BENGAL

40. BLACK-AND-RED WARE, DIHAR, DISTRICT BANKURA.—Shri K. N. Dikshit of the Survey discovered, black-and-red ware and terracotta balls from the vicinity of Sailesvara and Saresvara temples.

41. MEDIEVAL SITE, DHARAPAT, DISTRICT BANKURA.—An extensive site, yielding medieval pottery and terracotta animal figurine, was noticed by Shri K. N. Dikshit of the Survey at Dharapat.

42. BLAGK-AND-RED WARE AND OTHER FINDS, DISTRICT BURDWAN.—Shri V. Sen of the Survey collected black-and-red ware, microlithic flakes and fragments of copper objects from the mounds at Bulbuldanga and Munshidanga lying on Guskara-Burdwan road.

V. RADIOCARBON DATES[1]

The following radiocarbon dates were measured at the Physical Research Laboratory, Ahmadabad,[8] during the current year. The sites[3] are arranged alphabetically State-and site-wise. The dates are calculated on the basis of radiocarbon half-life value of 5730 years. For conversion into calender years (B.C./A.D. scale) 1950 has been taken as the base year.

DELHI

1. PURANA QlLA

PRL-97. Early historic deposits; charcoal; locus, PQL-N6, Qd. 2; layer 48; depth 10*35 m. Comment: rootlets removed. — 2055±145 (105 B.C.)

GUJARAT

2. AMBAMATA, DISTRICT BANAS KANTHA

PRL-53. Copper mining area; wood; underground mine, 12 m distance in no. 3 west Drive; depth 70 m; field no. AC-6. Na OH pre-treatment given. — 2HO±2OO (160 B.C)

3. PRABHAS PAT AN, DISTRICT JUNAGADH

(i) PRL-19. Chalcolithic culture; charcoal; locus, PP-I, Tr. B6; layer 9; depth 2-95 m. Na OH pre-treatment given. — 3185±165 (1235 B.C.)

(ii) PRL-20. Chalcolithic culture; charcoal; locus, PP-I, Tr. C6; layer 7; depth 2-12 m. Na OH pre-treatment given. — 3435± 110 (1485 B.C.)

Contributed by Dr D. P. Agrawal, Shri R. V. Krishnamurthy, Ku. Sheela Kusumgar and Dr R. K. Pant.

[z]Further details can be obtained from the submitting organizations.

[3]Samples submitted by: 1,10,11 and 15 by the Archaeological Survey of India; 2, by the Mineral Exploration Corporation Ltd., Ambaji; 3, 7 and 9, by the Deccan College Post-graduate and Research Institute, Pune; 4, by the Department of Archaeology, Haryana Government; 5 by the Sagar University, Sagar; 6, by the Vikram University, Ujjain; 8, by the Madras University, Madras; 12, by the Allahabad University, Allahabad; 13, by the Gorakhpur University, Gorakhpur; and 14, by the Banaras Hindu University, Varanasi.

SOTTAR, DISTRICT HISSAR

PRL-204. Harappa culture; charcoal; Trench ZB 1; layer 10; depth 1 13-1-28 m; sample No. 6. Na OH pre-treatment given.	3350±130 (1400 B.C.)

MADHYA PRADESH

5. BARKHERA, DISTRICT RAISEN

(i) PRL- 111. Chalcolithic culture; charcoal; layers II-III; depth 01-0- 2m; field no. C 26. Na OH pre-treatment given.	3265±110 (1315 B.C.)
(ii) PRL-113. Chalcolithic culture; seeds; layers II and III; depth 01-02m; field no. C 26. Na OH pre-treatment given. Comment: these may not form any association with the Chalcolithic culture.	7460±140 (5510 B.C.)

6. BHIMBETKA, DISTRICT RAISEN

(i) PRL-17. Pit-deposit; charcoal; pit no. 3; secondary laterite deposit; depth 0.6 m. Na OH pre-treatment given.	7790 ±220 (5840 B.C.)
(ii) PRL-18. Pit-deposit; charcoal; pit no. 2; sandy grey silt deposit resting over a sandy gravel; depth 2'76 m. Na OH pre-treatment given.	2725±130 (775 B.C.)

MAHARASHTRA

7. INAMGAON, DISTRICT PUNE

(i) PRL-78. Chalcolithic culture; Charcoal; locus H 9-19, house no. 38; sealed by layer 7; depth 0*75 m; field no. 1197. Na OH pre-treatment given.	2820 ±115 (870 B.C.)
(ii) PRL-93. Chalcolithic culture; charcoal; locus D7, house no. 36; layer 4;	3110±105 (1160 B.C.)

field no. 972.
Na OH pre-treatment given.

(iii) PRL-94. Chalcolithic culture; charcoal; locus D 8; layer 4, field no. 926 Na OH pre-treatment given. Comment: rootlets removed. — 3105±120 (1155 B.C.)

TAMIL NADU

8. KANCHIPURAM, DISTRICT CHINGLEPUT

PRL-22. Early historical; charcoal; locus O'-II'; layer 18; depth 6.16 m; field no. KCM-1. Na OH pre-treatment given. — 2430 ±130 (480 B.C.)

9. TOGARAPPALLI, DISTRICT DHARMAPURI

(i) PRL-134. Megalithic deposit; depth 1-05 m; field no. TGP-3. Na OH pre-treatment given. — 2240±110 (260 B.C.)

(ii) PRL-135. Megalithic deposit; charcoal; locus TGP-3; layer 5; depth 115 m; field no. TGP-3. Na OH pre-treatment given. — 2210±110 (260 B.C.)

UTTAR PRADESH

10. BATESHWAR, DISTRICT AGRA

(i) PRL-197. Period II; charcoal; locus BTR-1, A-l, Qd. 1; layer 14; depth 4-70 m; field no. BTR-1/3. Na OH pre-treatment given. — 2480 ±110 (530 B.C.)

(ii) PRL-198. Black-and-red ware deposits; charcoal; locus BTR-1, A-2, Qd.3; layer 19; depth 6.65 m; field no. BTR-1/5. Na OH pre-treatment given. — 2570 ±90 (620 B.C.)

(iii) PRL-201. Period II; charcoal; locus BTR-1, A-2, Qd. 1; layer 11; depth 4-20 m; field no. BTR-1/2. Na OH pre-treatment given. — 2590 ±160 (640 B.C.)

11. KHALAUA, DISTRICT AGRA

(i) PRL-67. Painted Grey Ware deposits; charcoal; locus KHL-I, II and IV; layer 7; — 2520±160(570B.C.)

depth 2.15 m; field no. Khalaua-T2/66. Na OH pre-treatment given. Comments: rootlets removd.

(ii) PRL-68. Painted Grey Ware deposits; charcoal; locus KHL-I, II and IV; layer 8; depth 2-35 m; field no. Khalaua-T3/66. Na OH pre-treatment given. — 2435 ±170 (485 B.C.)

12. KOLDIHWA, DISTRICT ALLAHABAD

(i) PRL-98. Chalcolithic culture; charcoal; locus KDW I, Al(b) III-VII; layer 2; depth 0"23 m; field no. AU/ALD/KDW/72-11.
Comments: rootlets removed. — 2050±160 (100 B.C.)

(ii) PRL-99. Chalcolithic culture; charcoal; locus KDW I, Al(a) O-III; layer 4; depth 06 m; field no. AU/ALD/KDW/72-12.
Comments: rootlets removed. — 2990 ±160 (1040 B.C.)

(iii) PRL-100. Chalcolithic culture(?); charcoal; locus KDW I, Al(a) O-III; layer 5; depth 0"8 m; field no. AU/ALD/KDW/72-13.
Na OH pre-treatment given.
Comments: rootlets removed. — 7390 ±240 (5440 B.C.)

(iv) PRL-101. Chalcolithic culture (?); charcoal; locus KDW I, Al(a) O-III; layer 6; depth 1-1 m; field no. AU/ALD/KDW/72-14. Na OH pre-treatment given. — 6480 ±185 (4530 B.C.)

(v) PRL-102. Chalcolithic culture (?); charcoal; locus KDW I, A(b); pit B sealed by layer 1; depth 0"42 m. Na OH pre-treatment given. — 2450 ±105 (500 B.C.)

13. SOHGAURA, DISTRICT GORAKHPUR

(i) PRL-178. Painted black-and-red ware deposits; charcoal; locus, trench ZB2; layer 11; depth 3-02 m; sample no. 3. Na OH pre-treatment given. — 3280±130 (1230 B.C.)

(ii) PRL-182. Period III; charcoal; locus, trench ZB2; layer 9; depth 1"85 m; sample nos. 6a and 6b. Na OH pre-treatment given Comments: dates are consistent within one standard deviation.	a. 2190±90 (240 B.C.) b. 2360 ±150 (410 B.C.)
(iii) PRL-183. Period III; charcoal; locus; trench ZB2; layer 7; depth 1"4. m; sample no. 8 a. Na OH pre-treatment given.	2540±110 (590 B.C.)

14. TAKIAPER, DISTRICT VARANASI

PRL-184. NBP deposits; charcoal; burnt layer between deposits of Periods I and II; layer 4; field no. TKP-1. Na OH pre-treatment given.	2130 ±110 (180 B.C.)

WEST BENGAL

15. BHARATPUR, DISTRICT BURDWAN

(i) PRL-15. Chalcolithic-neolithic culture; charcoal; trench G5-H5; layer 5; depth lm. Na OH pre-treatment given.	3385 ±140 (1435 B.C.)
(ii) PRL-187. Chalcolithic culture; charcoal; trench BRP-1/74-F3, Qd. 3, G4 to G3; layer 6; depth 1*95 m; sample no. 1. Na OH pre-treatment given.	3130±150 (1180 B.C.)
(iii) PRL-188. Chalcolithic culture; charcoal; trench BRP-1/74-B3, Qd. 1, B.3 to B 4; depth 2*40 m; sample no. 2. Na OH pre-treatment given.	2850 ±150 (900 B.C.)

VI. PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATIONS[1]

Besides the investigation of materials from some sites, special attention has been paid towards the specific identification of rice remains from several sites through the study of epidermal characters in order to establish the wild or cultivated status of rice discovered from archaeological sites. The epidermal characters of modern wheat, barley and millets have also been examined.

Charcoals from several archaeological sites kindly sent by Dr D. P. Agrawal have been processed and sectioned, and their identification is in progress. Among the charcoal samples some packets were found to contain carbonized food grains. These have been identified and reported here. The progress of work on palynology particularly in relation to environment of early man is also given in the report. For the materials we are thankful: to the Archaeological Survey of India; to Professor G. R. Sharma, Head of the Department of Archaeology, University of Allahabad, Allahabad; to Shri R. G. Agrawal, Director of Archaeology and Museums, Rajasthan; to Dr D. P. Agrawal of Physical Research Laboratory, Ahmadabad; to Dr V. N. Misra, Department of Archaeology, Poona University; to Dr S. K. Gupta, formerly of Tata Institute of Bombay and now of the Physical Research Laboratory; to Archaeological Commissioner, Sri Lanka; and to Dr F. R. Allchin of Cambridge University. For radiocarbon determination of Nepal samples we are obliged to Dr H. Willkomm of Kiel, West Germany.

SAMPLES FROM INDIA

BIHAR

1. CHIRAND, DISTRICT SARAN.—In two packets, each bearing TF no. 447, among charcoal samples sent by Dr D. P. Agrawal carbonized lumps of rice *(Oryza sativa)* and *legume Phaseolus radiatous (mung)* have been identified.

DELHI

2. PURANA QILA, NEW DELHI.—The epidermal characters of the fragmentary spikelets more particularly the pinhead-sized lumina and three-layered wall of the hair bases have allowed us to refer the rice spikelets in bricks from this site to *Oryza saliva,* the cultivated species of rice.

GUJARAT

3. SURKOTADA, DISTRICT KUTCH.—Continued research on the charred mass recovered from Locus XA4, QD. 1, layer 5, depth 1.6 m have confirmed the occurrence of *Eleusine coracana (Ragi)* and *Sataria italica* (the Italian Millet). The latter is of considerable interest as it has been discovered for the first time in India.

4. MALVAN, DISTRICT SURAT.—The pollen sequence from the ox-bow lake beside the archaeological mound excavated by Allchin and Joshi (1970) at Malvan shows in the

[1] Contributed by Dr Vishnu Mittre and Ku. R. Savithri of the Birbal Sahni Institute of Palaeobotany, Lucknow.

lower part succession of Grassland-Chenopod Savannah with pollen of *Holoptelea, Myrtaceae* and *Acacia*. The tree vegetation declines thereafter. The evidence from microforams suggests continuous marine influence at the site. Local estuarine conditions had prevailed here almost all through. A succession of climate from dry to slightly-moist changing to dry has been inferred. Possibly the Malvan pollen profile by comparison with the radiocarbon dated profile from the Nal lake belongs to early Holocene.

5. NAL LAKE, DISTRICT AHMADABAD.—The shallow brackish water lake, about 60 km sq, of Ahmadabad has yielded a pollen profile which bears eleven C 14 dates covering a large part of the Holocene. The pollen sequence is as from Malvan, though the top part dated from 2550 B.P. to 700 B.P. is without pollen except the extreme top dated to 160 B.P. Between 6000 B.P.-3500 B.P. a Grassland-Chenopod Savannah with *Holoptelea* and *Myrtaceae* constituted the vegetation much as observed at Malvan. Unlike Malvan this lake had three major episodes of marine incursion one before 7000 B.P., second between 6000-4000 B.P., and the third during 160 B.P.

KARNATAKA

6. TEKKALAKOTA, DISTRICT BELLARY.—In the layer 2 at a depth of one foot in Trench A, Locus GWD carbonized seeds of *Phaseolus vulgaris and Dolichos biflorus* have been recognized. The layer 2 at 2' 4" in Trench 2, Locus II has yielded abundance of *Phaseolus vulgaris* together with *Dolichos biflorus* and *Zizyphus mummulariria* whereas at 2.8" in the same layer *Lathyrus sativus, Dolichos biflorus* and *Phaseolus vulgaris* have been found.

MADHYA PRADESH

7. BHIMBETKA, DISTRICT RAISEN.—Three soil samples sent by Dr V. N. Misra from a cave at Bhimbetka on pollen analysis revealed the absence of pollen grains though microscopic charcoal fragments were discovered in some of them.

MAHARASHTRA

8. INAMGAON, DISTRICT PUNE.—Pollen analysis of three samples of buried soils along the right bank of Ghod River about 1·60 km distant from the central Indian chalcolithic site carried out by Vishnu-Mittre and H. P. Gupta has revealed the occurrence of a dry deciduous forest dominated by *Holoptelea integrifolia.* Precipitation under 700 mm per annum has been inferred (Vishnu-Mittre and Gupta, H.P. *Palaeobotanist,* vol. 23, II).

PUNJAB

9. RUPAR, DISTRICT AMBALA.—Short wheat *(T. sphaerococcum)* and possibly *Paspalum sp*.).have been recognized in the packet bearing TF no. 212 discovered among the packets of charcoals sent by Dr D. P. Agarwal.

RAJASTHAN

10 NOH DISTRICT BHARATPUR.—Rice remains earlier reported from this site have on epidermal characters been found to belong to the cultivated strain, *Oryza sativa.*

11. KALIBANGAN, DISTRICT GANGANAGAR.—The report of the occurrence of rice remains in the terracotta cakes and pai by Sharma (1972) led us to re-examine the plant remains in them. Supported by epidermal studies, the plant remains (chaff, kernels, fragmentary spikelets) have been found to belong to barley and in a few cases to wheat. The overall absence of the chess-board pattern, a characteristic of rice, and the absence of rice epidermis in the cakes and pai suggests that rice was unknown to the Harappans at Kali bangan and Sharma's recognition of rice here is not soundly based (Vishnu-Mittre and R. Savithri, *Palaeobotanist* 22(2): 124-126, 1975).

12. JODHPURA, DISTRICT JAIPUR.—The bricks and clay pieces from this archaeological site have been found to contain compressions of cultivated rice *(Oryza sativa).* Detailed work is in progress.

13. LUNKARANSAR, DISTRICT BIKANERJ SAMBAR, DISTRICT JAIPUR; DIDWANA, DISTRICT NAGUAR; PUSHKAR, DISTRICT AJMER.—The details of pollen analytical investigations from the Salt lakes (Sambhar, Didwana, Lunkaransar) and fresh water lake (Puskhar) are now available in full (Singh *et al, Phil. Trans. Roy. Soc.* B. 267:467-501) which reveal that between 10,000 B.P. to 5000 B.P. the climate in Rajasthan was dry, between 5000 B.P. to 3000 B.P. it was wet and subsequently dry again. The botanical climatic indicators chosen by Singh *et al* on re-examination particularly from the consideration of top pollen spectra in two lakes profiles the one Lunkaransar in the driest belt and the other Pushkar from the moistest belt suggest that they are indicators of dry climate rather than wet (Vishnu-Mittre 1974, *Geophytology,* 4(1) 46-53). The ecological analysis of the pollen data which is in progress is providing evidence that between 5000-3000 B.P. the Hypsithermal period, the environment in Rajasthan was characterized by high velocity winds, increased intensity of dust storms and maximum warmth. The salt lakes had probably risen between 5000-6000 B.P.

UTTAR PRADESH

14. KOLDIHWA, DISTRICT ALLAHABAD.—Both the neolithic and chalcolithic potsherds from various levels at this site have been found to bear imprints of rice. The impressions on neolithic potsherds appear to be of wild rice. The neolithic here seems to be anterior to 6480 ±185 (about 4530 B.C.), this being the single G 14 date of the basal part of the Chalcolithic. The soil sticking to potsherds from Koldihwa was found to be devoid of pollen. Further work is in progress.

15. BELAN RIVER, RANGARHWA NALA, LEKHAHIA AND KURHAULDA, DISTRICT ALLAHABAD.—Pollen analysis of twenty samples from Belan river sections, Rangarhwa, Nala, Lekhahia and Kurhaulda was carried out. Only the following samples yielded 18-45 pollen grains of grasses, a few of ferns and some of unidentified plant species.

Sample no. 17, Site Lekhahia, Locus-Trench I, Stratum 3, depth 30 cm.
Sample no. 19, Site Lekhahia, Locus-Trench 1, Stratum 1, depth 7 cm.
Sample no. 20, Site Kurha Ulda, Stratum 3.

SAMPLES FROM ABROAD

NEPAL

16. KATHMANDU VALLEY.—The sticky black carbonaceous clay *(Kalimatti)* which fills the valley at varymg depths up to 400 m alternating with fine to coarse sandy deposits

has been found to be polleniferous. At about 8 m depth at Thimi and about 4 km NE of Kathmandu it has been found to be about 38,000 years B.P. (KI-808). The top deposits overlain by sand at *Kalimatti* are dated to 17,000 to 13,700 years B.P. (KI-807-811). The top deposits are contemporaneous with the Weichselian Glaciation, and it appears that the black carbonaceous clay with intercalating sand deposits in this valley belong to the entire Quaternary period.

A pollen diagram has been constructed from *Kalimatti* of which description is in progress. Another pollen diagram awaiting description has been constructed from about 6-m of exposed section comprising sandy clay, criss-cross and laminated sands and highly decomposed lignite-bearing sand on top along the bank of Manohara, a tributary of Bagmati river, about 3 km NE of Kathmandu. The lignitic band here is dated from 13,930 B.P. to 11,800 B.P. (KI-803-805).

SRI LANKA

17. BELI LENA ATHULA.—The carbonized kernels dated to 7860±110B.P. (TF-1094) at 5.6-m depth from the cave at Bali Lena Athula, near Maniyagama, still remain unidentified. Most probably they belong to a wild plant.

THAILAND

18. NON NOK THA.—Epidermal studies of the burnt husk and chaff in the potsherds bearing rice imprints has not established whether they belong to wild or cultivated strain largely owing to lack of sufficient details.

vn. MUSEUMS

1. TAJ MUSEUM, AGRA.—Arrangements are being made to organize a Museum inside the Taj Mahal to display material associated mainly with the history of the monument.

2. GOVERNMENT MUSEUM, AJMER.—A fragment of a *torana* in black stone from Vishnu temple at Karia Kala village, in District Ajmer, was acquired for the Museum. The fragment is carved with *kinnaras* with musical instruments on one side and elephant riders on the other.

3. ALLAHABAD MUSEUM, ALLAHABAD.—During the year under review the Museum added to its collection seven terracotta objects, three stone sculptures, a miniature human figure in copper, a clay sealing and an inscription of about the second-third century A.D.

Among the seven terracotta objects, four plaques belong to the Sunga period. One of them depicts a tall female standing on the right looking at a mirror held by a dwarf lady on the left. The second fragment depicts a male and a female showing Greek features and dress dancing with their hands raised above head.

One of the stone sculptures, showing a standing four-armed Varahi holding a dagger, fish, *khappar* and *vajra* in her hands, may be dated to the twelfth century A.D. Another stone sculpture from Jhusi, depicting a standing female figure, holding lotus-bud in one hand, may be dated to the thirteenth century A.D. The clay sealing from Kausambi bears the legend *Yuvarajasya Navvasya.*

The inscription, also from Kausambi, engraved twice on a circular block of stone has two lines in Brahmi characters of *circa* second-third century A.D. The legend reads *Amachasa Salkavanasa Bhu (Bha) tilasa putasa bhayaya payavilasa miyikaya hidaya piyayi kulakam.*

4. GOVERNMENT MUSEUM, ALWAR.—The objects on display and in reserve collection were provided with new labels. Two thrones of the Maharaja and four chairs of the Art Gallery of Silisot Palace of Alwar were received and displayed.

5. ARCHAEOLOGICAL MUSEUM, AMARAVATI.—The work of laying a garden around the Museum is in progress.

6. GOVERNMENT MUSEUM, AMBER.—The main entrance was provided with collapsible iron gates for security purposes.

7. MUSEUM AND PICTURE GALLERY, BARODA.—The archaeological section of the Museum acquired, during the year under review, several remarkable antiquities. Out standing among these are: (i) a grey schist image (pi. LI A) of *Kalasodara* Kubera (24 x 16 x 4.5 cm) from Kavi (Kapika), in Taluk Jambusar, District Bharuch, in south

Gujarat, assignable to the late Gupta or to the Rashtrakuta period; (ii) a schist stone image (pl. LI B) *of Haladhara* Balarama (20 x 15x3 cm), also from Kavi, holding *hala* in his left hand and the right hand akimbo; (ill) a squarish block of yellow marble (21 x 22 x 9 cm), with both sides carved with the figures of donor couples, belonging to *circa* twelfth century A. D. from north Gujarat, and bearing a defaced inscription on one side below the figures;

and (iv) a sandstone image of Garuda (36 x 15 x 14 cm) seated with folded hands probably from south Gujarat, belonging to *circa* sixteenth century A.D.

The five bronze images and one of brass recently acquired comprise: (i) a bronze image (pl. LII A) of Uma-Mahesvara (15x9x5 cm), probably from north Gujarat, belonging to Gurjara-Pratihara period; (ii) a highly worn out bronze image (pl. LII B) of Vishnu with Bhudevi and Markandeya standing on either side of *mula-nqyaka* (20 x 10 x 7 cm), probably from a region around Ahmadabad, dated to *circa* twelfth century A.D. ; (iii) a bronze representing parents of Tirthankara seated under a *chaitya-vriksha* with a small figure of seated Jina in between them (19x6'5x2 cm) with highly obliterated inscription on the back of *parikar,* belonging to north Gujarat and dated to *circa* fourteenth century A.D., (iv) a tribal bronze (12x 7x6 cm), of a deity (Vishnu) seated on Garuda with *sankha* and *chakra* in rear hands and the front hand resting on the knees, and (v) a bronze image of goddess Maha-Lakshmi (Il x 6.5 x 3.5 cm), seated on an elephant, holding *gada, dhol, sriphala* and *patra* in hands, from Gujarat and dated to the sixteenth-seventeenth century A.D.

The wooden objects acquired include two figures of prancing horses (22 x 23·5 x ll and 21 x 24.5 x 11 cm) which were used for decorating the front walls of the ancient houses in Saurashtra, and two pieces of brackets which were used for supporting balconies and cornices (60x14x15 and 79 x 13 x 16 cm), probably belonging to a region around Vadodara. All the four may be dated to the seventeenth-eighteenth century A.D.

The following hoards of coins which were acquired by the Department of Archaeology, Gujarat State, were handed over to the Museum for preservation, display and research. They comprise: (i) Gadhaiya coins weighing 122 kg and 960 grams, unearthed from Rahiyal, Taluk Modasa in north Gujarat; (ii) seven gold coins found at Kothiakhad, District Kheda, of Gujarat Sultans; (iii) eight hundred and sixty-eight highly corroded copper coins, probably of Muslim dynasties found at Patan in District Mahesana; (iv) five thousand Gadhaiya coins from Kheralu in District Mahesana; and (v) thirty-two Gadhaiya coins of debased silver found at Shamalwada, Taluk Banas Kantha, which was in the possession of the Director of Archives and Historical Monuments, Bombay.

A beautiful Akota bronze of *chowrie-bea-rer* was displayed on a revolving platform with a view to showing the object from all sides. An exhibition of Indian coins was organized during this year.

8. GOVERNMENT MUSEUM, BASAVAKALYAN.—The Museum acquired Jaina sculptures and a panel depicting a couple riding on elephant.

9. GOVERNMENT MUSEUM, BHARATPUR.—Two rooms adjacent to the main Darbar Hall were reorganized by providing twelve new showcases for the display of sculptures.

10. ORISSA STATE MUSEUM, BHUBANESWAR.—The Museum acquired during the year under review seventeen rare and valuable archaeological objects, two inscribed swords from Raja Saheb of Badamba, twenty-four Natural History objects, eighty-four art and craft objects including *pata-chitra,* filigree and Dhokra works, sixty-two anthropological objects, including musical instruments, costumes and ornaments from different tribal areas of the State, seventy-three palm-leaf manuscripts including one *Manjantra* and fifteen letters of Late Samanta Chandra Sekhar written in his own hand.

11. ARCHAEOLOGICAL MUSEUM, BIJAPUR.—Arrangements are being made to open a new gallery for sculptures and inscriptions in the ground floor of the building.

12. GOVERNMENT MUSEUM, BIKANER.—The windows and doors of the galleries on the ground floor were provided with curtain to prevent bright light, high temperature, dust and salt action on the displayed exhibits.

13. ARCHAEOLOGICAL MUSEUM, BODHGAYA.—The Museum acquired the images of Buddha, Surya and Varaha during the year under review. The work of preparing the cement casts of the Sunga railing is in progress.

14. PRINCE OF WALES MUSEUM, BOMBAY.—During the year under review the Museum acquired following sculptures: (i) image of Varahi (66 x 30 cm) in granite stone, of Early Chola period, dated to tenth century A.D.; (ii) image of Mahishasuramardini in schist stone (74 x 35.5 cm), of ninth-tenth century A.D. from Gujarat; (iii) image of Bhairavi in black stone (58 x 32 cm), from Gujarat, dated to twelfth-thirteenth century A.D. ; (iv) *Sapta-matrika* panel in buff sandstone (70 x 24 cm), of late Gurjara-Pratihara period, of tenth century A.D. ; (v) female figures carved on red sandstone slab (48 x 29 cm) from Madhya Pradesh, datable to twelfth-thirteenth century A.D.; (vi) male figure carved on a stone (51 x 25 cm) from Karnataka, datable to seventeenth century A.D.; and (vii) Revanta (?) carved on a stone (60.5 x 31.5 cm) from Karnataka, datable to the twelfth century A.D.

15. GOVERNMENT MUSEUM AND ART GALLERY, CHANDIGARH,—During the year under review, the Museum acquired six Brahmanical sculptures on permanent loan from the National Museum, New Delhi. The Terracotta Gallery consisting of eight showcases was rearranged and objects re-displayed. Stone pedestal were provided for Brahmanical sculptures. Some handwritten and printed labels were provided for the exhibits in the Sculpture Gallery. A map showing the sites yielding Gandhara sculptures is being prepared.

16. MUSEUM OF SCIENCE, CHANDIGARH.—The objects acquired during the year under review, include: (i) seven fossils of elephant's jaws, limbs, etc., as gifts from the Forest Officer, Chandigarh; (ii) nine fossils of Bovine horn, tooth of horse, etc., as gift from the Department of Anthropology, Punjab University, Chandigarh; (iii) twelve plant fossils as gifts from Birbal Sahni Palaeobotanical Institute, Lucknow; (iv) thirty fossils and minerals as gift from the Geological Survey of India, Chandigarh; (v) thirty fossils, three stone tools and an iron object from Pinjore area as gift from Shri Hargopal Jhamb, Government Museum and Art Gallery, Chandigarh; (vi) one hundred and three palaeo lithic tools, collected from Attirampakkam by the Curator of the Museum; (vii)six items of megalithic pottery from Government Museum, Madras, in exchange; (viii) a stone pestle and an elephant's jaw as gift from Shri Nek Chand, Chandigarh; (ix) a fossilized tusk of an extinct elephant as gift from Dr A. P. Khatri, CSIR, New Delhi; (x) a fossilized wood from Tiruvakkarai, Madras, as gift from the Geological Survey of India, Madras; and (xi) three palaeolithic tools collected from Pinjore by the Curator of the Museum.

17. INDIAN MUSEUM, CALCUTTA.—Two bays in the Archaeology Gallery exhibiting Buddhist and Brahmanical sculptures from Java and Cambodia were renovated (pl. LIII A). The sculptures were displayed within built-in showcases having suitable illumination through diffused lighting arrangements. A general label and a map showing the distribution of archaeological remains in Java and Cambodia were also displayed.

18.

The sculptures in the Gandhara Gallery (pl. LIII B) are being re-displayed on wooden pedestals with appropriate breaks to avoid monotony and with possible precaution against

salt action. Lighting system in the Archaeological Section was improved by adapting modem methods.

Two hundred and twenty-four coins acquired from the public were identified and reported. Documentation work in the Coin Room is in progress.

18. LOCAL ANTIQUITIES MUSEUM, CHITRADURGA.—During the year under review, the Museum acquired sculptures, such as *mithuna* panel, royal couple, horse-rider panel, standing goddess, image of a female and lady archer, all brought from the vicinity of Chitradurga. One palm-leaf manuscript *(Vachana Bharata)* was also acquired.

19. GOVERNMENT MUSEUM, CHITTAUR.—Dioramas of Gadia Lohars and Bheel Bheelani were displayed in life-size showcases so as to give a glimpse of folk life. Eight pedestals were got prepared for display of sculptures.

20. GOVERNMENT MUSEUM, DUNGARPUR.—Repairs to the Museum building, which was heavily damaged by rains, were carried out, and sculptures were displayed on the pedestals. Steps were taken for installing electricity in the Museum.

21. ASSAM STATE MUSEUM, GAUHATI.—During the year under review, the Museum acquired a Mayurpankhi pleasure-boat, donated by the Pontiff of the Vaisnavite Kamalabari Satra, Majuli. A stone image of Lakshmi (45 x 20 cm), belonging to *circa* tenth century A.D., was also acquired. The image, standing in *tribhanga* pose, is holding a *chamara* in her hand.

22. ARCHAEOLOGICAL MUSEUM, HAMPI.—The display work of one gallery was completed (pi. LIV). The work in the second gallery is in the final stage. The highlight of the display are the colossal sculptures of Virabhadra, Hanuman and Kubera as well as an architectural set-up of an entrance to a *mandapa*. The entrance doors are being designed specially in the Vijayanagara style.

A clay-model measuring 9 x 9 m covering nearly 36 sq miles of the area of the ruins of the Vijayanagara empire is being prepared. This gives a bird's eye view of the ancient township. Miniature scale-models of important monuments, hills, etc. are also being made.

23. ARCHAEOLOGICAL MUSEUM, HALEBID.—During the year under review, the Museum acquired twelve antiquities of the Hoysala period. Notable among these are six inscribed slabs in old Kannada script. One of the inscriptions throws light on the rule of Chalukyas over this area.

24. GOVERNMENT CENTRAL MUSEUM, JAIPUR.—Display in some of the showcases was improved by adapting scientific methods. The reserve collection was arranged systematically. The proper electrification inside the showcases was also attended to.

25. GOVERNMENT MUSEUM, JHALAWAR.—The canvas curtains were provided within the sculpture gallery to save the icons from the rain water. Fifty pedestals for sculptures were repainted.

26. GOVERNMENT MUSEUM, JODHPUR.—Recently-acquired stone icons from Neemaj (Pali) and specimens of local art and crafts were put on display. Wall showcases in the

Painting Gallery were repaired and chemically treated. Iron bars and expanded metal *jalis* were provided to the windows and ventilators in various galleries to ensure better safety of Museum exhibits. A long painted scroll in cloth, depicting scenes from the life of Bapuji was put on display.

27. ARCHAEOLOGICAL MUSEUM, KHAJURAHO.—Repairs to the exterior of the Museum and the interior of the verandah were carried out. Strong grills were provided in the sky lights as a security measure.

28. GOVERNMENT MUSEUM, KITTUR.—One sculpture of Durga from Asundi was acquired for the Museum.

29. ARCHAEOLOGICAL MUSEUM, KONARAK.—Preparation of index-cards, cataloguing of museum objects, remodelling of pedestals are in progress. Preparation of a chart showing the evolution of Oriya script is nearing completion.

30. ARCHAEOLOGICAL MUSEUM, KONDAPUR.—Repairs to the entire exterior of the Museum and the verandahs were carried out. Doors and windows were also repaired and strengthened. Some mercury vapour lamps were provided.

31. GOVERNMENT MUSEUM, KOTA.—Sculptures were re-displayed. Exhibits were provided with new labels and cataloguing work was attended to.

32. KRISHNAPURAM PALACE MUSEUM, KRISHNAPURAM.—The Museum was reorganized and alterations were made in the arrangement of display. Inscription Gallery was added along with the other objects on display with transliterations and charts on the evolution of old scripts.

33. ARCHAEOLOGICAL MUSEUM, LOTHAL.—Arrangements are being made to organize a site-museum for exhibiting representative collection of excavated materials, such as seals, terracottas, pottery, beads, copper implements, jewellery, etc., in their proper perspective.

34. STATE MUSEUM, LUCKNOW.—A seminar of Indian Miniature Paintings was organized from 24.2.75 to 25.2.75. A temporary exhibition on Woman in Indian Miniatures was arranged during the year under review.

35. ARCHAEOLOGICAL MUSEUM, FORT SAINT GEORGE, MADRAS.—Indo-French Gallery was opened to the public. The Wodeyar Gallery is being arranged. Drawings different types of palanquins of the seventeenth-nineteenth century A.D. were prepared. Display was improved by providing artificial lighting in Galleries 6 and 7. As an experimental measure, labels were prepared in Screen Printing Process.

36. GOVERNMENT MUSEUM, MADRAS.—Ten terracotta images were provided with uniform pedestals. The descriptive label for 'Pallava Pillars' was renewed. The showcases in the new Buddha Gallery were rearranged. The masonite painted labels for the mural paintings in the new Buddha Gallery were renewed. Ten bronzes in the Bronze Gallery were provided with painted masonite labels, replacing the existing printed ones. A special exhibition of the two metal images, one of Kali from Tiruvengadu, District Thanjavur

and the other of Jaina Tirthankara (inscribed) from Gidmgal, District South Arcot, belonging to the tenth and thirteenth century respectively was held.

37. GOVERNMENT MUSEUM, MANDORE.—Electric installations and proper lighting arrangements were made for the safety during night.

38. GOVERNMENT MUSEUM, MATHURA.—During the year under review, the Museum acquired thirty-six sculptures, one terracotta object, two manuscripts, nineteen paintings, five bronzes and a set of eleven tiny silver coins. Among the collection special mention may be made of: (i) four-armed Yaksha in load-bearing pose in red sandstone (27 x 20 cm), belonging to the medieval period; (ii) seated figure of Ganesa in *lalitasana,* bearing a double-beaded chain ornament with a big-sized jewel, in red sandstone (82 x 52 cm), with plain halo, probably of Gupta period; (iii) lower part of seated Buddha (pi. LV B) showing cross-legged, folds of lower garment falling on the throne supported by three lions, with epigraph in three lines recording its installation by Senaka, in red sandstone (85 x 47 cm), presented by Smt. Dayavati Devi of Vrindaban; (iv) image of Vishnu holding (lotus, club, conch and wheel, of which latter two' in personified form, in black stone (77 x 32 cm), from Raya, (presented by Shri Rajendra Prasad Sharma) belonging to the medieval period; (v) a terracotta semi-circular plaque (pi. LVA) representing a female head peeping out of an arched window (23 x 16 cm), a fine representative of Gupta period; (vi) headless bust of a male diety, wearing a *vanamala,* a round necklace and a central gem, hair partly falling on the shoulders in the shape of braids (40 x 45 cm), of Kushan period; (vii) torso of Balarama holding a cup in his broken right arm and bearing a necklace and large *vaijayantimala,* traces of snake coil on the back in red sandstone (76 cm), of Kushan period, unearthed near Bajna and handed over by the Archaeological Survey of India; (viii) head, probably of Vishnu bearing an elaborate high crown and earrings and incised *tilaka* mark on the forehead, in buff stone (23 cm), of medieval period; (ix) a part of a lion with wide-opened mouth and large manes, in red sandstone (22 cm), of Kushan period; (x) fragment of a leogryph, manes in lozenges cut to shape, a Brahmi letter *sa* inscribed on the left side near the eye of the animal (26 cm), belonging to Kushan period; (xi) upper part of a rail post (22 cm), showing winged lions surmounted by the snake-hoods, a side of the pillar top showing reel and beaded lines with rosette motif in between, of Kushan period; (xii) architectural fragment representing a *kirtimukha* motif in dull red sandstone (14 x 16 cm), of medieval period; (xiii) a stele, showing Kartikeya in *abhqya-mudra* in red sandstone (12 x 8 cm), belonging to Gupta period; (xiv) architectural fragment, carved with a hunter holding a bow and quiver with interesting drapery and headgear, in red sandstone (13 cm), of Kushan period; (xv) a female-head wearing a *tika,* large round earrings and hair arranged in top knot (14 cm), belonging to Gupta period; (xvi) torso probably of Vamana with dwarfish form and pot belly, wearing neck lace, pearled *yajnopavita,* beaded waist band, etc., with traces of halo behind, in buff sand stone (48 cm), belonging to medieval period; (xvii) head of a Tirthankara with hair arranged back and small bump above, in buff sandstone (28 cm), of medieval period; and (xviii) a panel dipicting court scene of a Naga chief (pl. LV C) from Sonkh.

The 'Museum Week' was celebrated from 9.1.75 to 16.1.75, to popularize the Museum and to attract more visitors.

39. GOVERNMENT MUSEUM, MERCARA.—The collection of the Museum was enriched by the inclusion of antiquities and art objects donated by General K. M. Cariappa. The

specimens include stone sculptures, metal images from Nepal, wooden objects, war-equipments, anthropological specimens from Australia and Kashmir, two *virakals,* etc.

40. DEPARTMENTAL MUSEUM, MYSORE.—The sculptures of Uma-Mahesvara, Virabhadra, Venugopala, Kali, hero-stone, bullock cart with rider, horse-rider, Ganesa, Surya, Vishnu, Mahishasuramardini, Bhairava, Lakshmi-Narasimha, and Uma-Mahesvara riding on Nandi, ranging from twelfth to seventeenth centuries A.D. in date, and most of them being in Hoysala style, were acquired for the Museum.

41. ARCHAEOLOGICAL MUSEUM, NAGARJUNAKONDA.—The documentation work is in progress.

42. LOK SAMSKRITI SHODH SAMSTHAN MUSEUM, NAGAR-SRI.—The archaeological section of the Museum was enriched by acquiring explored material comprising: pottery; terracotta cakes, figurines, flesh-rubbers, dabbers; beads of semi-precious stones; conch pieces; shell-bangles, dice; corroded metal pins, arrowheads; coins; and fragments of sculptures from the sites, such as Sothi, Karoti, Nohar, Brahman-Vasi, Pandusar, Pallu, etc., in District Ganganagar in Rajasthan, and late Harappan pottery from Tobe-wala-kot and Daheru in District Ludhiana of Punjab. A broken but beautiful image of Mahavira, head of Brahma and a damsel carrying food, all in sandstone, found at Pallu, were donated by Shri Manji Ram Bharadwaj of Nohar.

43. CENTRAL MUSEUM, NAGPUR.—During the year under review, the Museum acquired three sculptures, found while digging for planting trees by the Forest Department, at Mandhal, Umred Taluk in District Nagpur. The sculptures consist of: (i) four-headed Siva with *lakuta* in his hand, fourth head being shown at the back side, in red sandstone; (ii) a rare sculpture (pi. LVI) of Siva with four heads, as in the case of the above one, and with four more heads of which two on the shoulders and two on thighs; and (iii) an *urdhva-linga* Siva in standing position. All the three sculptures can be dated to third-fourth century A.D. Besides, antiquities from Mohenjodaro and Harappa, such as pottery, terra cotta figurines and beads, were purchased from Shri Dabhade of Nagpur. A set of eye copy of Bagh Cave wall-paintings done by him was also acquired. A unique copper-plate of the Rashtrakuta king Adityaraja was acquired from Shri D. Y. Watane of Achalpur, District Amaravati. This plate may be dated to the sixth century A.D.

44. ARCHAEOLOGICAL MUSEUM, NALANDA.—One stone image of standing Buddha in *abhqya-mudra,* which was acquired in 1971 was exhibited. Three Jaina stone sculptures were also exhibited during the occasion of the 2500th *mahaparininana* of Lord Mahavira. Large number of photographs were prepared and pasted in the index-cards.

45. NATIONAL MUSEUM, NEW DELHI.—During the year under review, the Museum acquired a number of valuable sculptures, bronzes and terracotta figurines through purchase and gifts from various people. Two sculptures of Gupta period, one of *Ekamukha linga* and the other of a bust of Nataraja from Nachana Kuthara in Madhya Pradesh, were presented by Sm. Pupul Jaykar, New Delhi. Another image of Gupta period, from Tuma in District Guna, Madhya Pradesh, was presented by the Vice-Chancellor of Sagar University. A few fragments of sculptures from Bharhut such as a head of Yakshi (pl. LVII B), a part of a male torso (pl. LVII A) were added to the collection through

purchase. A charming sculpture showing a damsel after bath, of Chandellas (tenth century A.D.) from Khajuraho, a dancing Chamunda, of the Paramaras (twelfth century A.D.) from Malwa, and a Pala bronze image of Manjusri (pl. LIX B) of (ninth century A.D.), Manasa Pala, tenth century A.D.), Marichi (Pala, eleventh century A.D.), Vishnu (pl. LVIII B) of Sena period (twelfth century A.D.) and Vishnu of thirteenth century A.D. are some of the important acquisitions. Besides, two Chola bronzes, one of them a standing Vishnu (pl. LVIII A) and the other of Manikkavachakar (pl. LIX A), great masterpieces of south Indian metal-sculpture, were also added to the Museum collection.

Two important exhibitions, one on 'Siva in Indian Art' and the other on 'Maharaja Sivaji and his Times', were organized by the Museum. Besides, an exhibition of one thousand paintings representing various schools of Indian paintings, drawn from Museum collection was sent to Brussels, at the invitation of Bibliotheque Royale, Brussels. A catalogue of the exhibition was also brought out on the occasion.

46. ARCHAEOLOGICAL MUSEUM, PURANA QILA, NEW DELHI.—Arrangements have been done to open this new Museum to the public. Documentation work is in progress.

47. PADMANABHAPURAM PALACE MUSEUM, PADMANABHAPURAM.—Arrangements are being made to construct a new building for the Museum in front of the Palace.

48. PATNA MUSEUM, PATNA.—One stone image of a female holding a *chauri* in her right hand (18.3 cm), belonging to ninth-tenth century A.D., was presented to the Museum by Uchtar Vidyalaya, Udhwa (Rajmahal).

49. ARCHAEOLOGICAL MUSEUM, RED FORT, DELHI.—The reorganization work of the northern half of the Museum was completed and thrown open to visitors. These new galleries exhibit inscriptions, arms, manuscripts, miniature paintings, porcelain and other miscellaneous art objects of the early Mughal emperors. The remaining half is almost complete and will be opened shortly.

50. ARCHAEOLOGICAL MUSEUM, SARNATH.—The entire Museum was repaired. Some Old pedestals were replaced by brackets. Some galleries were provided with new coir matting and the exhibits with new labels. The Medieval Gallery is under reorganization. Old masonry pedestals were dismantled and flooring relaid. Preparation of new showcases is in progress.

51. GOVERNMENT MUSEUM, SHIMOGA.—During the year under review, the Museum acquired image of Garuda, hero-stones, Vishnu, Sarasvati, Yoganarayana, Jaina sculptures, Virabhadra, Yoga-Narasimha, Ugra-Narasimha, Durga, Sati-stone, couple, *mithuna* panel, Surya and *Sapta-matrika* panel, copper coins belonging to East India Company and an old knife.

52. ARCHAEOLOGICAL MUSEUM, SRIRANGAPATNA.—A face-lift was given to the Museum by making necessary changes in the pedestals, showcases and gallery lighting.

53. KOLLENGODE HOUSE MUSEUM, TRICHUR.—Arrangements are being made to open the Museum to the public. Antiquities such as sculptures, wood carvings, bronzes,

paintings, prehistoric objects, megalithic objects, temple models, etc., have already been acquired.

54. GOVERNMENT MUSEUM, UDAIPUR.—Steps were taken for scientific display of objects and cataloguing. Efforts were made for providing better safety to the Museum. The reserve collection was reorganized.

55. ARCHAEOLOGICAL MUSEUM, VAISHALI.—The main gallery was organized and thrown open to the public. The exhibited objects include sculptures, pottery, terracotta objects, beads, seals and other miscellaneous art objects covering the period from the Mauryan to the Gupta period. A site-plan of Vaishali and a map of India showing Site Museums of the Survey were exhibited for general information.

56. BHARAT KALA BHAVAN, VARANASI.—During the year under review, the Museum acquired twenty coins of various types, such as of Greek kings, Muslim rulers, East India Company, besides some notes of British India. Thirty-three stone sculptures, twenty-three terracotta figurines and four seals were also added to the collection of the Museum. Among these the following are worth-mentioning: (i) ring-stone displaying Mother Goddess from Kausambi, belonging to the Mauryan period; (ii) image of Agni from Bharhut, belonging to the Kushan period; (iii) terracotta head of a female figure from Kusambi, belonging to the Mauryan period; (iv) a terracotta plaque, showing a circus scene from Kausambi, datable to the Sunga period; (v) damaged terracotta plaque showing Kubera and Hariti from Kausambi, belonging to the Kushan period; (vi) terracotta headless Maitreya figure from Kausambi of Kushan period; and (vi) fragment of a terracotta figurine showing middle portion of Chamunda from Kausambi, datable to the Gupta period.

57. ARCHAEOLOGICAL MUSEUM, VELHA GOA.—In connexion with the exposition of the relics of St. Francis Xavier, the Museum was completely reorganized and a face-lift was given to the Galleries (pis. LX and LXI B). Besides, two more galleries were opened, exhibiting more antiquities of the Indo-Portuguese phase of Indian History. A coin room was also opened with the Indo-Portuguese coins, transferred from the Archaeological Museum, Fort St. George, Madras. An interesting wooden model of an eighteenth century-ship was displayed (pl. LXI A).

PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

CENTRAL CIRCLE

Madhya Pradesh

1. KOTESVARA MAHADEVA TEMPLE, KASHITOLA, DISTRICT BALAGHAT.—Flag-stones were provided on all sides of the temple and a dry rubble masonry wall was constructed in front of the temple to prevent rain water from damaging the foundations.

2. FORT, LANJI, DISTRICT BALAGHAT.—The hidden masonry wall at the entrance was exposed while clearing the debris. A brick masonry wall was constructed at places to strengthen the fort-wall.

3. ROCK-CUT CAVES, BAGH, DISTRICT DHAR.—Stone pitching was provided in front of Caves 2, 3, 5 and 6 to prevent stagnation of water. The approaches towards east and west of the caves were levelled and re-laid. Caves 2 and 4 were cleared of debris.

4. CARAVAN SARAI, MANDU, DISTRICT DHAR.—The walls of the eastern and northern wings were partly restored.

5. CHAMPA BAOLI, MANDU, DISTRICT DHAR.—The collapsed portions of the southern wall were reconstructed and watertightened. Underpinning was done in the wall wherever necessary.

6. CHISTIKHAN'S MAHAL, MANDU, DISTRICT DHAR.—The work of underpinning and watertightening the walls was executed.

7. GADHASHA'S SHOP, MANDU, DISTRICT DHAR.—The work of underpinning the walls was executed. The original flooring was exposed while removing the debris.

8. GADHASHA'S PALACE, MANDU, DISTRICT DHAR.—The northern side of the collapsed compound wall was reconstructed, and the flooring of the Palace was re-laid. The top of the walls was watertightened.

9. JAMI-MASJID, MANDU, DISTRICT DHAR.—The flooring was relaid wherever necessary with red limestone slabs matching the original, and the recesses in the flooring of the mosque and the adjoining verandah were pointed with cement mortar. The compound wall was waterightened.

10. KAPOOR TALAO, MANDU, DISTRICT DHAR.—The collapsed portion of the western wall was reconstructed. The platform on the southern side of the tank was provided with lime-concrete flooring.

11. NAHAR-JHAROKHA, MANDU, DISTRICT DHAR.—Underpinning and watertightening of the walls of the Nahar-Jharokha complex was carried out. The terrace of Rani-mahal in the same complex was provided with lime concrete.

12. NILAKANTH PALACE, MANDU, DISTRICT DHAR.—The flooring and the steps of the tank in the complex were pointed with cement mortar, and a galvanized iron pipe railing was provided around it.

13. HAMMAM-KHANA, BURHANPUR, DISTRICT EAST NIMAR.—The bulged portion of the *Hammam* was dismantled and reconstructed in cement mortar as per the original. The ceiling was concreted to prevent leakage.

14. RAJA-KI-CHHATRI, BURHANPUR, DISTRICT EAST NIMAR.—The bulged ashlar masonry of the dome was dismantled and reset in cement mortar as per the original.

15. BADA MADARASA, CHANDERI, DISTRICT GUNA.—Fallen portion of the enclosure wall was reconstructed in coursed rubble masonry and pointed with cement mortar.

16. JAMI-MASJID, CHANDERI, DISTRICT GUNA.—The bulged and damaged masonry wall was dismantled and reconstructed in coursed rubble masonry, and pointed with cement mortar.

17. KOSHAK-MAHAL, CHANDERI, DISTRICT GUNA.—Fallen portion of the masonry enclosure wall was reconstructed in coursed rubble masonry, and the joints were pointed with cement mortar.

18. NIZAM-UD-DIN'S TOMB, CHANDERI, DISTRICT GUNA.—Collapsed portion of the masonry enclosure wall was reconstructed in coursed rubble masonry, and the joints were pointed with cement mortar.

19. EASTERN AND WESTERN GRAVES, TOMB OF MUHAMMAD GHAUS, GWALIOR, DISTRICT GWALIOR.—The collapsed retaining wall, in coursed rubble masonry, of the group of graves was reconstructed.

20. MAN SINGH'S PALACE, GWALIOR, DISTRICT GWALIOR.—The work of water-tightening the terrace of the cells was carried out.

21. TELI-KA-MANDIR, GWALIOR, DISTRICT GWALIOR.—The area around the temple was levelled and dressed.

22. TOMB OF MUHAMMAD GHAUS, GWALIOR, DISTRICT GWALIOR.—The base of the masonry enclosure wall was watertightened by filling up the pits adjoining the wall with boulders and *morum.*

23. TOMB OF TANSEN, GWALIOR, DISTRICT GWALIOR.—The damaged and sunken stone pavement was re-laid over rammed *morum.*

24. BRAHMANICAL ROCK-CUT TEMPLES, DHAMNAR, DISTRICT MANDASOR.—The work of water-tightening the ceiling and the plastering of the walls was carried out. An expanded metal door was provided at the entrance.

25. BUDDHIST CAVES, DHAMNAR, DISTRICT MANDASOR.—The work of underpinning of the cavities in the walls of the caves was carried out. Expanded metal doors were fixed at the entrance.

26. GADHI, PADHAVLI, DISTRICT MORENA.—Debris around the structure was cleared and the plinth was exposed.

27. KAKANMADH TEMPLE, SUHANIA, DISTRICT MORENA.—The stone pavement at the base of the temple was conditioned.

28. SATVITE TEMPLE, BHOJPUR, DISTRICT RAISEN.—The bulged ashlar masonry of of the platform in front of the main temple was dismantled and reconstructed as per the original. The irregular portion of the steps was dismantled and re-built as per the original.

29. BARADARI, FORT, RAISEN, DISTRICT RAISEN.—A galvanized iron-pipe railing was provided to the open verandah. Expanded metal shutters were provided to the entrances.

30. DHOBI-MAHAL, FORT, RAISEN, DISTRICT RAISEN.—Debris lying in the rooms of the Mahal was removed and the collapsed portions of the walls were reconstructed as per the original.

31. JHINIRI-MAHAL, FORT, RAISEN, DISTRICT RAISEN.—The work of reconstructing the collapsed portions of the walls and watertightening of their tops was carried out.

32. PATHWAY, FORT, RAISEN, DISTRICT RAISEN.—The work of laying stone-paved pathway from Raisen village to the entrance gate of the fort is in progress.

The old pathway running from the foot of the hill to the top leading to the monument was reconditioned.

33. PEMEYKA TEMPLE, FORT, RAISEN, DISTRICT RAISEN.—The bulged portion of the ashlar wall was dismantled and reconstructed as per the original. The sanctum of the temple was provided with a collapsible iron shutter.

34. RANI-MAHAL, FORT, RAISEN, DISTRICT RAISEN.—The broken pillars were reconditioned.

35. BUDDHIST MONUMENTS, SANCHI, DISTRICT RAISEN.—The tops of the walls of the Monasteries 36 and 37 were watertightened. Stone pitching was provided at the edges of the cemented approach road, together with a drain along the road for flow of rain water.

36. SURWAYA-GADHI, SURWAYA, DISTRICT SHIVPURI.—The fallen portion of the southern Gadhi wall was reconstructed.

37. GHAUBARA-DERA 1 AND 2, UN, DISTRICT WEST NIMAR.—The area around the temples was provided with stone pitching to avoid water stagnation. The protected area was also fenced for preventing any encroachment.

EASTERN CIRCLE

Assam

38. GOLAKGHAR OR MAGAZINE, JOYASAGAR, DISTRICT SIBSAGAR.—The area around the temple was provided with barbed-wire fencing.

39. SIBDOL, SIBSAGAR, DISTRICT SIBSAGAR.—The work of pointing the joints of the brick masonry of the temple with *Mvcie-surkhi* mortar was carried out.

Nagaland

40. RUINS OF A FORT (DIMAPUR RUINS), DISTRICT TUENSANG.—The gateway was dismantled and reconstructed as per the original, with bricks cut to the required size and shape. Barbed wire fencing with turn-style gates was also provided.

Orissa

41. GHAUSATH-YOGINI TEMPLE, RANIPUR JHARIAL, DISTRICT BOLANGIR.—The displaced and out-of-plumb ashlar masonry of the temple was reset as per the original and pointed. The cracks were grouted and made watertight.

42. BARBATI FORT, CUTTACK, DISTRICT GUTTACK.—Vegetation growth over the fort walls was removed.

43. BAKESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—In continuation of the last year's work *(1973-74,* p. 65), the *deul* was thoroughly grouted and pointed to make it watertight. The *mastaka* was repaired after resetting the *amalaka* in proper alignment. The plinth was repaired with laterite stone dressed with sandstone facing. The south-west corner of the *jagamohana* was dismantled and reset after providing the missing portion with new stones. The work is in progress.

44. LINGARAJA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The stone flooring of the corridor leading from the kitchen to the *bhoga-mandapa* was conditioned, besides grouting of the cracks in *the jagamohana* and two other minor shrines.

45. MARKANDEYESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—A compound wall of laterite stones in cement mortar was built around the area, besides removing the debris from the temple-complex.

46. MEGHESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—In continuation of the last year's work *(1973-74,* p. 65), the courtyard of the temple was conditioned by laying old and new stones on a concrete bed maintaining a proper slope for the easy flow of rain water.

47. MITRESVARA TEMPLE BHUBANESWAR, DISTRICT PURI.—The dislodged and worn-out ashlar masonry of the compound wall was reset, and missing portions were reconstructed with dressed stones.

48. SISIRESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The preliminary work for the restoration of the missing roof of the *jagamohana* was undertaken (pl. LXII). A bulged out portion of the vertical wall was dismantled and rebuilt. In order to preserve the existing sculptured walls of the *jagamohana,* small pieces of new stones matching the original were reset. The flooring of the temple was also attended to. The work is in progress.

49. VARAHI TEMPLE, CHAURASI, DISTRICT PURI.—In continuation of the last year's work *(1973-74,* p. 65), the dilapidated roof of the *jagamohana* as well as some portion of the walls were dismantled and reset as per the original (pl. LXIII).

50. UDAYAGIRI-KHANDAGIRI CAVES, JOGMARA, DISTRICT PURI.—In continuation of the last year's work *(1973-74,* p. 66), steps were provided to connect Cave 14 (Hathi Gumpha) with the Cave 12 (Bagh Gumpha) partly by chiselling the original rock-surface and partly by new stones. Expanded metal doors were provided for Cave 9 (Mahavira Gumpha) and Cave 8 (Barabhuji Gumpha).

51. MINOR SHRINES, SUN TEMPLE, KONARAK, DISTRICT PURI.—The dislocated masonry of the minor shrines was reset and missing portions were reconstructed with dressed stones.

52. SUN TEMPLE, KONARAK, DISTRICT PURI.—Salvage operation was undertaken on a limited scale beyond the compound wall on the southern side of the temple and a number of buried sculptures and ornamented architectural pieces were recovered.

53. JAGANNATH TEMPLE, PURI, DISTRICT PURI.—The thick accretionary plaster on the exterior walls of the Lakshmi temple in the north-western comer of the complex was stripped off exposing the rich sculptural decorations (pis. LXIV and LXV). It was observed that the sculptured portions had not only developed small and big cracks mainly due to the corrosion and expansion of iron dowels but had also suffered deleterious effect of salt action. It was also noticed that the plaster had not been coated directly over the entire sculptured surface, but the recessed portions had been found to be filled up with stones or bricks and then plastered over in three layers, using potsherds in each layer as binding material. The *gandi* had been repaired in the past with ashlar masonry and as such does not show the usual *bhumi* divisions of a *rekha-deul.* The work of resetting the loose masonry, grouting and filling up of the cracks, and fissures,, chemical treatment and preservation of the surface of the walls and repairs to the ceiling at the junction of the *deul* and the *jagamohana* is in progress.

West Bengal

54. MURALI MOHAN TEMPLE, BISHNUPUR, DISTRICT BANKURA.—The damaged wire fencing of the temple compound was repaired after providing a retaining wall towards the eastern slope by filling the ditches with earth. A pathway laid with bricks was also provided around the temple.

55. SAILESWAR AND SARESWAR TEMPLES, DIHAR, DISTRICT BANKURA.—In continuation of the last year's work *(1973-74,* p. 66), the bulged out revetment walls as well as the cracked and sunken platform of the temple-complex were dismantled and reconstructed.

56. ANCIENT MOUND, BHARATPUR, DISTRICT BURDWAN.—The decayed brick work of the Buddhist *stupa* was repaired and watertightened as per the ancient character of the structure.

57. JAINA BRICK TEMPLE, DHAVALA, DISTRICT BURDWAN.—In continuation of the last year's work *(1973-74,* p. 66), the missing brick masonry was reconstructed and the bulged out portions and decayed bricks in the walls were removed and repaired by underpinning.

58. HAMSESVARI TEMPLE, BANSBERIA, DISTRICT HOOGHLY.—The various items of work, such as replastering of the wall surface, grouting of the cracks, replacement of worn-out mouldings and treatment of the wood-works with paints were undertaken.

59. BARADUARI-MASJID, GAUR, DISTRICT MALDA.—A barbed-wire fencing was provided around the area.

60. GHAMKATI-MASJID, GAUR, DISTRICT MALDA.—The brick work was treated with composite mortar, besides attending to the repairs of the barbed-wire fencing.

61. DAKHIL-DARWAZA, GAUR, DISTRICT MALDA.—A barbed-wire fencing was provided around the area.

62. GUNMANT MOSQUE, GAUR, DISTRICT MALDA.—The dome of the mosque was treated with lime-concrete.

63. KOTWALI-DARWAZA, GAUR, DISTRICT MALDA.—The brick masonry was repaired with composite mortar.

64. TOMB OF AZIMUNNISSA BEGUM, AZIMNAGAR, DISTRICT MURSHIDABAD.—The decayed bricks were removed and replaced by old bricks. The decayed lime-concrete terrace-ing was removed and re-laid with new lime-concrete.

65. MOSQUE OF MURSHID QULI KHAN, KATRA, DISTRICT MURSHIDABAD.—The exposed brick masonry, including the roof of the gateway, was watertightened with composite mortar.

66. TOMB AND MOSQUE OF ALIVARDI KHAN AND SIRAJU'D-DAULA, KHOSHBAGH, DISTRICT MURSHIDABAD.—Repairs to the monuments covering reconstruction of the compound wall, renewal of roof-terracing of the gate and the pathway as well as clearance of debris were carried out.

MID-EASTERN CIRCLE

Bihar

67. ANCIENT SITE OF VIKRAMASILA MONASTERY, ANTICHAK, DISTRICT BHAGALPUR.—In

continuation of last year's work *(1973-74,* p. 67), special repairs to the main *stupa* in the centre of the monastery were carried out. Top courses of the brick masonry of the *stupa* were watertightened and wide joints of the masonry were filled up with lime-cement mortar. The breached portion of the structure and missing portions of" walls were reconstructed. Debris lying on the north-eastern comer was removed.

68. ASOKAN COLUMN KNOWN AS LAUR PILLAR, DISTRICT EAST CHAMPARAN.—The work of fencing the area around the Asokan column with barbed wire is in progress.

69. SHAMSHER KHAN'S TOMB, SHAMSHERNAGAR, DISTRICT GAYA.—The extant portions of the eastern side of the tomb was fenced with barbed wire and the site was cleared of wild vegetation.

70. RAJA BALI-KA-GARH, DISTRICT MADHUBANI.—In continuation of last year's work *(1973-74,* p. 67), a part of the fortification wall was exposed after removing the overlying debris.

Pathway was provided with brick-ballast soling, mixed with earth, and the edges were provided with brick-lining.

71. ASOKAN COLUMN, KOLHUA, DISTRICT MUZAFFARPUR.—The entire archaeological site was cleared of wild vegetation. The trees grown on the remains of the brick *stupa* were removed and the entire site was dressed and levelled after removing the debris of the *pucca* house.

72. EXCAVATED REMAINS, NALANDA, DISTRICT NALANDA.—The debris from the cells of the Monasteries 6 and 8 was removed and floors were provided with lime-cement concrete mixed with colouring pigment matching the original. The top courses of the brick masonry of the walls of the Monastery 9 were dismantled and reset in lime-cement mortar. Storm-water drain on the back of the Monasteries 4 and 6 was cleared of silt and provided with brick-lining.

73. EXCAVATED REMAINS, KUMRAHAR, DISTRICT PATNA.—Compound wall was cons tructed near the graves on the eastern side of the Mauryan palace site to avoid tresspassing and encroachment. M. S. railing was provided on both sides of the pathways near the site-museum.

74. MIR-ASHRAF'S MOSQUE, PATNA, DISTRICT PATNA.—Decayed plaster was removed and fresh lime-cement plaster provided. Flooring of the forecourt was conditioned. The height of the boundary wall was raised to avoid tresspassing to the monument.

75. SHER SHAH'S TOMB, SASARAM, DISTRICT ROHTAS.—The pathway connecting the main entrance gate and the tomb was provided with M. S. railing. The floor of the terrace of the tomb was repaired.

76. EXCAVATED REMAINS, CHAKRAMDAS, DISTRICT VAISHALI.—The work of fencing the acquired land adjoining the mud-brick *stupa* with barbed wire is in progress.

77. RUINED FORTRESS, NANDANGARH, DISTRICT WEST CHAMPARAN.—The site of colossal *stupa* was cleared of wild vegetation and the area was dressed and levelled. Barbed wire fencing around the site was repaired.

Uttar Pradesh

78. THE SITE OF STUPA AND MONASTERY OF THE SAKYAS, PIPRAHWA, DISTRICT BASTI.—The top courses of the brick masonry of recently-excavated western monastery were dismantled and reset in lime-mortar. The sides of the structures were recess-pointed with lime-mortar. The area of the trench was dressed and drainage provided for draining out rain water. The recently-excavated *stupa* at Piprahwa was also taken up for conservation. The entire surface of the *stupa* was waterightened. Missing portions of the structure were restored and the area around the *stupa* was dressed. The work is in progress.

79. RAMBHAR STUPA, AMRUDHWA, DISTRICT DEORIA.—Pathways at the site of the *stupa* were renovated by providing brick ballast soling and spreading *surkhi.* Brick edging was also provided on both sides of the pathways. Repairs to the well at the site were also carried out.

80. EXCAVATED REMAINS, KUSHINAGAR, DISTRICT DEORIA.—The top courses of the walls of the monastery, west of the *Nirvana-stupa,* were watertightened and the joints were pointed with lime-mortar. The area was completely dressed after removing the vegetation growth. A steel railing was provided on both sides of the pathway near the entrance. The existing barbed-wire fencing around the site was repaired and additional diagonal wires were provided for security purpose.

81. MATHA KUAR-KA-KOT, KUSHINAGAR, DISTRICT DEORIA.—The top courses of the brick masonry of the excavated remains were watertightened and the joints in the walls were pointed with lime-mortar. Entire area of the site was dressed and lime-concrete path ways were laid out.

82. EXCAVATED REMAINS, SARNATH, DISTRICT VARANASI.—Ancient structures were exposed on the south-western side of the main shrine while removing the debris. The extant tops of the brick masonry structures were watertightened by removing the upper two courses of bricks and resetting them in lime-cement mortar. The open joints of the walls were recess-pointed after raking out the roots of vegetation and washing out the joints thoroughly.

The concrete apron of the *Dhamek-stupa* was repaired and the surface plastered.

NORTH-WESTERN CIRCLE

Delhi

83. ADHAM KHAN'S TOMB, DELHI.—The decayed ineffective concrete of the floor and roof of the corridor around the dome was removed and a fresh layer of concrete was laid matching the original. The fallen portions of the rubble masonry were rebuilt.

84. ARAB-SARAI, DELHI.—The fallen portions of the eastern gateway were restored and *bajri* was spread over the causeways.

85. HUMAYUN'S TOMB, DELHI.—The fallen parts of the rubble masonry wall of the compound and also the missing *kanguras* were restored. The joints of the masonry walls were pointed.

86. JAMI-MASJID, DELHI.—The decayed parts of the white inlay marble work on the soffit of the main arch were replaced by new one matching the original.

87. KHIRKI-MASJID, DELHI.—The portions of the sunken flooring were levelled and ashlar stones were reset into it and the wide open joints of the flooring were pointed. The joints in the walls were also pointed.

88. KOTLA FIRUZ SHAH, DELHI.—In continuation of the last year's work *(1973-74,* p. 69), the joints of the rubble stone masonry walls of the *baoli* were pointed with concreted mortar. The patches in the masonry walls were underpinned.

89. QUDSIA MOSQUE, DELHI.—In continuation of the last year's work *(1973-74,* p. 69), the dead and ineffective plaster of the dome as also of the terrace around it was replaced with fresh lime-mortar. The patches in the brick masonry wall were underpinned. A boundary wall was built in rubble masonry around the monument.

90. QUTAB-MINAR, DELHI.—With a view to providing a facelift to the monument, a cycle stand was provided at the gate to avoid unsystematic parking.

91. DIWAN-I-AM, RED FORT, DELHI.—In continuation of the last year's work *(1973-74,* p. 70), red sandstone flooring of the ashlar stones was laid. The joints of the red sandstone ceiling were pointed and the cavities and hollows were grouted.

92. KHAS-MAHAL, RED FORT, DELHI.—The original marble facing of the front western wall was exposed, after removing the plaster of the later date. All the buildings with marble facing were cleaned with water and other chemicals to restore the original tint.

93. MUMTAZ-MAHAL, RED FORT, DELHI.—Red sandstone flooring was provided to the outer pathways of the monument so as to avoid dust flowing into the Museum.

94. NAUBAT-KHANA, RED FORT, DELHI.—The dead plaster of the walls was removed and replastered with geometric designs as per the old pattern. The work of providing fresh ceiling to the monument is in progress.

95. RAUSHANARA-BARADARI, DELHI.—The original fountain attached to the monument was exposed after removing debris.

96. SAFDARJANG'S TOMB, DELHI.—The interior of the main entrance gateway was provided with stone-slab flooring. The ornamental plaster work on the walls of the southern *baradari* was restored.

97. SHIKARGAH-KUSHAK, TEEN MURTI, DELHI.—The joints of the masonry wall were pointed and ornamental plaster was restored. The fallen portions of the rubble masonry walls were rebuilt.

98. ZAFAR-MAHAL, DELHI.—The debris in the cells was removed with a view to exposing the original structures. The walls of the cells were strengthened by underpinning and pointing. The courtyard and cells were provided with concrete flooring. The decayed wooden members of the ceilings were replaced and a false ceiling was provided.

Haryana

99. IBRAHIM LODI'S TOMB, PANIPAT, DISTRICT PANIPAT.—The structure was repaired by pointing the joints of brick masonry and underpinning the masonry wherever necessary.

100. KHOKRAKOT, ROHTAK, DISTRICT ROHTAK.—R. C. C. boundary pillars were provided around the mound to mark out the protected area.

101. SHEIKH CHILLI'S TOMB, THANESAR, DISTRICT THANESAR.—With a view to laying out a garden, the area around the monument was levelled. Turfing along the causeways was undertaken. M.S. grill railings were provided in the northern and southern wings of the tomb. The front wall was strengthened by underpinning and pointing.

Punjab

102. FORT, BHATINDA, DISTRICT BHATTNDA.—The bulging eastern bastion of *lakhauri* bricks was dismantled and reset with original material. The top portion of the bastion was made watertight by plastering with lime-mortar. The roof over the entrance gateway of the fort was also repaired.

Rajasthan

103. FORT BHATNER, HANUMANGARH, DISTRICT GANGANAGAR.—The brick-on-edge drain throughout the fort was repaired and deep pits close to the fortification wall were levelled with earth to prevent percolation of rain water into the wall.

104. AKBARI-MASJID, AMBER, DISTRICT JAIPUR.—The courtyard of the mosque was properly cleaned and red *bajri* was spread over the causeways.

105. JAGAT SIROMANI TEMPLE, AMBER, DISTRICT JAIPUR.—The flooring of the temple wherever decayed was removed and re-laid over lime-concrete cushion. The missing and damaged red sandstone *chhajjas* were replaced with new ones. The damaged lintel stone was repaired.

106. PUNDRIKJI-KI-HAVELI, JAIPUR, DISTRICT JAIPUR.—The walls of the Haveli were white-washed, flooring was conditioned with lime-concrete, and unserviceable doors were replaced with new ones.

107. RANTHAMBHORE FORT, RANTHAMBHORE, DISTRICT SAWAI MADHOPUR.—An approach rubble-stone road was laid between Ganesh Pol and Andheri Gate. A railing around Siva Mastaka was provided and an approach road was laid. Another compound wall in rubble stone masonry was constructed around *Pushpa-vatika* and the joints in the walls were pointed. Doors and windows were provided to Supari-mahal and walls were

plastered as per the original. The plinth of the Hamir's Ban Kachhari was exposed during debris clearance work. The gateways of Hamir's Palace and *Chhatri* were repaired by removing vegetation growth and grouting of cracks and pointing the masonry. The ceiling of the *Dargah* in the fort was reconstructed.

SOUTHERN CIRCLE

Kamataka

108. AMRTTESVARA TEMPLE, AMRITAPURA, DISTRICT CHIKMAGALUR.—The leaky *mandapa* was watertightened. The dilapidated southern *prakara* wall was reconstructed. An approach road to the temple from the main road was laid.

109. VIRANARAYANA TEMPLE, BELAVADI, DISTRICT CHIKMAGALUR.—Stone flooring was laid all round the Venugopala and Yoganarasimha shrines and the joints were pointed with cement mortar. The protected area was fenced.

110. VIDYASANKARA TEMPLE, SRINGERI, DISTRICT CHIKMAGALUR.—A retaining wall was reconstructed for the breached embankment on the river side of the temple.

111. CHENNAKESAVA TEMPLE, BELUR, DISTRICT HASSAN.—The northern portion of the open courtyard from the Andal shrine to the tank was brought to a uniform level by re-laying the stone pavement and pointing the joints. The terrace of the old kitchen in the north-west comer was watertightened. Repairs to the inside walls were also attended to.

112. LAKSHMIDEVI TEMPLE, DODDAGADDAHALLI, DISTRICT HASSAN.—The entire courtyard around the main shrine and the porch were paved with flag-stones. The encroached area was reclaimed.

113. HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—The flooring inside the temple was re-laid, substituting missing stones and pointing the flag-stones with cement mortar.

114. LAKSHMINARASIMHA TEMPLE, NUGGEHALLI, DISTRICT HASSAN.—The damaged stucco figures in the front niches of the entrance *gopura* were remodelled and toned to match the original. The terrace of the main temple was watertightened.

115. SADASIVA TEMPLE, NUGGEHALLI, DISTRICT HASSAN.—The western wall of the front *mandapa* was reset in plumb line. The *jagati* of the main temple was repaired and re-paved.

116. GROUP OF MONUMENTS, SRAVANABELGOLA, DISTRICT HASSAN.—The worn out flooring behind Gomatesvara was removed and a fresh flooring was laid in lime-mortar, matching the original.

117. RAMALINGESVARA TEMPLE, AVANI, DISTRICT KOLAR.—The damaged portion of the brick shrines of Sugrivesvara and Visvesvara were reconstructed and the missing slabs of the roof replaced.

118. KOLARAMMA TEMPLE, KOLAR, DISTRICT KOLAR.—-The flag-stones were provided around the temple and a drain was provided for the flow of rain water. The protected area was fenced and a gate fixed for entrance.

119. SOMESVARA TEMPLE, KOLAR, DISTRIGT KOLAR.—The work of fencing the protected area is in progress.

120. PANCHAKUTA BASTI, KAMBADAHALLI, DISTRICT MANDYA.—Stone pavement was laid around Trikutachal and its terrace was watertightened.

121. NARAYANASVAMI TEMPLE, MELKOTE, DISTRICT MANDYA.—Modelling of the stucco work as per the original in the inner *prakara* niches was completed (pl. LXVI).

122. COL. BAILEY'S DUNGEON, SRIRANGAPATNA, DISTRICT MANDYA.—The flooring of the dungeon was laid in concrete after filling up the pits. An approach pathway was laid.

123. DARIA-DAULAT BAGH, SRIRANGAPATNA, DISTRICT MANDYA.—The damaged fountain channels and the tank were repaired by replacing the dead concrete and building the side walls in brick. The old fountains were revived to working condition on all the four sides.

124. GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA.—The damaged flooring in the Khankhana was removed and re-laid in fresh concrete.

125. JAMI-MASJID, SRIRANGAPATNA, DISTRICT MANDYA.—The flooring around the Masjid was laid in fresh concrete and the top plastered.

126. RANGANATHASVAMI TEMPLE, SRIRANGAPATNA, DISTRICT MANDYA.—The terrace was watertightened, and the window shutters and doors were painted.

127. SRIKANTESVARA TEMPLE, NANJANGUD, DISTRICT MYSORE.—The damaged plaster on the terrace was removed and re-plastered.

128. RAMESVARA TEMPLE, NARASAMANGALA, DISTRICT MYSORE.—The modelling of the stucco figures as per the original of the *vimana* was completed.

129. KESAVA TEMPLE, SOMANATHPUR, DISTRICT MYSORE.—The *jagati* was reset and pointed.

130. PARAMESVARA SHRINE, GHANDRAGUTTI, DISTRICT NORTH KANARA.—The that ched roof was replaced by a stone one and rain-water drains were provided. The cella was paved with stone flooring. The entrance was provided with steps and a grilled door fixed.

131. KEDARESVARA TEMPLE, BELGAVI, DISTRICT SHIMOGA.—The work of laying stone flooring in the *mandapa* is in progress. The protected area was fenced with barbed wire.

132. AGHORESVARA TEMPLE, IKKERI, DISTRICT SHIMOGA.—The *vimana* was water-tightened by grouting and pointing with cement-mortar.

133. RAMESVARA TEMPLE, KELADI, DISTRICT SHIMOGA.—The wooden architectural members of the ceiling, beams, pillars and doors of the Ramesvara shrine and the *chandrasila* were treated with wood preservatives. Flooring in front of the Parvati shrine was laid and joints pointed.

134. PALACE-SITE OF SIVAPPA NAYAKA, NAGAR, DISTRICT SHIMOGA.—The excavated remains of the palace were reconstructed by using the original fallen laterite stones, and the flooring was paved in cement mortar.

135. KALHALE BASTI, BARKUR, DISTRICT SOUTH KANARA.—The Temples 1 and 2 of the Basti were watertightened. The fallen debris was removed and the complex made neat and tidy.

136. CHENNAKESAVA TEMPLE, NAGALAPURA, DISTRICT TUMKUR.—The accumulated debris to a height of 1.5 to 2 m around the temple was removed and a stone masonry platform was constructed around the temple.

Kerala

137. FORT ST. ANGELO, CANNANORE, DISTRICT CANNANORE.—The fallen wall facing the Mapila Bag was reconstructed and the open area fenced.

138. BEKAL FORT, PALLIKERE, DISTRICT CANNANORE.—The watch-tower was repaired by replacing the weathered laterite stones. The fallen wall in the south-eastern comer was rebuilt. Recessed pointing was done to the joints in the wall.

139. MATTANCHERRY PALACE, COCHIN, DISTRICT ERNAKULAM.—The outer wall on the southern and western sides strengthened by providing damp-proof course, by introducing grantite slabs and plastering with cement mixed with hydrofuge. The worn out wooden planks of the ceiling in the eastern wing were replaced by teakwood planks. The flooring of the first storey was repaired. Showcases were fixed into the walls for displaying the weapons.

140. JAIN TEMPLE, KIDANGANAD, DISTRICT KOZHIKODE.—The protected area around the temple was fenced and a gate provided.

141. FORT, PALGHAT, DISTRICT PALGHAT.—The overgrown vegetation in the entire moat and the fort wall was removed. Two parapet walls were built at the drawbridge as a safety measure.

142. SIVA TEMPLE, PERUVANAM, DISTRICT TRICHUR.—Extensive repairs were carried out to the roof of the *garbha-griha* of the Madathil-Appan shrine.

143. ROCK-CUT CAVE-TEMPLE, VIZHINJAM, DISTRICT TRIVANDRUM.—The entire cave was fenced with barbed wire.

Pondicherry

144. MOOLANATHASWAMI TEMPLE, BAHOOR, PONDICHERRY.—Accretionary walls in the main *mandapa* and a huge accretionary structure in front of Dakshinamurti shrine on

the southern side were dismantled. A grilled barrier with door is provided for Nataraja and Thyagaraja shrines for the safety of the bronze images.

145. VADAGIRISVARA TEMPLE, TIRUVANDARKOIL, PONDIGHERRY.—The debris was cleared exposing original plinth with inscription of the Amman shrine. Skylight was provided to the main *mandapa,* and the terrace re-plastered after removing the dead plaster. The entire protected area was fenced, providing a gate at the entrance.

Tamil Nadu

146. GHOLESVARA TEMPLE, MELPADI, DISTRICT NORTH ARGOT.—The area around the temple was fenced with barbed wire.

147. FORT, VELLORE, DISTRICT NORTH ARGOT.—Gross-bars were provided in the gaps of the upper rampart to prevent accidents. Sentry-rooms on the rampart were repaired and colour-washed matching with the original.

148. JALAKANTESVARA TEMPLE, FORT, VELLORE, NORTH ARGOT.—The cracked beams and lintels in the *kalyana-mandapa* were strengthened by introducing iron girders. The terraces of *kalyana-mandapa* and *thirumadil* were watertightened. A pump-set was installed for maintaining water supply to the garden. The accretionary walls abutting the western side were removed. The wood works in the temple were painted.

149. ATVAR KOIL, KODAMBALUR, DISTRICT PUDUKKOTTAI.—Accumulated earth around the temple was partially removed.

150. MOOVAR KOIL, KODAMBALUR, DISTRICT PUDUKKOTTAI.—The flooring was paved with bricks and joints pointed. The *sikharas* of the twin temples were grouted with cement mortar. A closed drain was provided for rain water. Barbed-wire fencing with a gate was provided.

151. CHENNARAYAPERUMAL TEMPLE, ADIYAMANKOTTAI, DISTRICT SALEM.—The newly-acquired land was fenced and an approach pathway was provided. The bulging walls of the *gopuram* entrance were dismantled and reconstructed. The terrace was watertightened.

152. NARASIMHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM.—Repairs to the *vahana-mandapa* were executed.

153. RANGANATHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM.—Plastering of the walls, wherever necessary, and watertightening of the terrace of the Amman shrine were executed.

154. FORT, GINGEE, DISTRICT SOUTH ARGOT.—The *chhajja* of the gymnasium was repaired and the interior walls plastered. The original level of the Pondicherry and Vellore gateways were exposed after removing debris. The courtyard, inner courtyard, side rooms, corridor and the underground drainage were repaired by resetting the floors and repairing the walls and plastering them. The murals near the Kamalakanni Amman shrine was protected from rain and sun by providing a *chhajja* for shade and railings to prevent damage

from the public. The clock-tower on the Rajagiri hill was covered by R. C. G. roof and railings erected to ward off any accident.

155. SIVA TEMPLE, GINGEE, DISTRICT SOUTH ARGOT.—The area around the temple was cleared of vegetational growth and fenced. The flooring of the *mandapa* and *garbha-griha* was reset, and the buried *linga* was lifted up and reset.

156. VENKATARAMANASVAMI TEMPLE, GINGEE, DISTRICT SOUTH ARCOT.—The *prakara* wall was reconstructed and accumulated debris around the temple was cleared, exposing the *adhisthana* and the original level maintained. The flooring of the cloister *mandapa* was paved in concrete after removing the debris. During the clearance work a number of broken sculptures including two huge *dvarapalas* were recovered.

157. TALAGIRISVARA TEMPLE, PANAMALAI, DISTRICT SOUTH ARCOT.—Accretionary walls were removed, doors and grills were provided as a safety measure, stone steps and the *mandapa* flooring re-laid in concrete. Sufficient land was acquired from the road to the foot of the hill for laying an approach road.

158. MUCHAKUNDESVARA TEMPLE, KODAMBALUR, DISTRICT PUDUKKOTTAI. ---The gaps in the compound wall were reconstructed by using old stones. Barbed-wire fencing was erected on the northern side as a security measure.

159. IRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.—A hume-pipe was provided for draining the rain water into the tank. The Nataraja-mandapa and *ardha-mandapa* were provided with a grilled frame for the safety of bronze images. Undulating floor around Nataraja-mandapa and the main shrine was levelled. Parapet wall was reconstructed and underpinned, wherever necessary, and plastered. Lighting arrangement was done for the Art Exposition Gallery. The accretions inside the temple and the moss over the pillars, beam and ceiling were removed. Accretionary stone work and debris within the temple were removed.

160. BRIHADISVARA TEMPLE, GANGAIKONDACHOLAPURAM, DISTRICT THANJAVUR.—The undulating steps to the Nayaka *mandapa* were reset and the debris removed. The parapet wall was reconstructed from the ground level. A stone masonry platform was built for sculptures. During the removal of debris in the cloister in one of the bays forming into a room nine huge figures of Aditya (about 1.50 m) were exposed.

161. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—Watertightening of the *vimana* and *ardha-mandapa* was carried out. A lawn was laid in the temple courtyard. Stone pathway was repaired. Flooring to the *ratha-shed* was laid. Doors and windows were provided wherever necessary. The basement of Nataraja shrine and the cloister *mandapa* were grouted and underpinned as well as the brick flooring was laid.

162. VALISVARASVAMI TEMPLE, VALIKANTAPURAM, DISTRICT THANJAVUR.—Terraces of cloister *mandapa* and *ardha-mandapa* and the *vimana* of the main shrine were watertightened.

163. ROCK-CUT TEMPLE, TIRUMALAPURAM, DISTRICT TIRUNELVELI.—The raised plat form was dismantled and a flight of steps were provided instead.

SOUTH-EASTERN CIRCLE *Andhra Pradesh*

164. DODDESVARA TEMPLE, HEMAVATI, DISTRICT ANANTAPUR.—An iron-grill door was provided to the entrance of the north-eastern *mandapa* of the compound wall to check trespassing.

165. VIRABHADRASVAMI TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—The debris over the rock flooring around the *mandapa,* west of Raghunatha shrine, was removed and a new inscription in nineteen lines carved on the mother-rock was brought to light. Teak wood temple-type doors with brass knobs were provided to the western *gopura* entrance, and to the shrines of Virabhadrasvami and Raghunatha. Dislodged stone slabs of the flooring *yajnasala* were reset and pointed.

166. PARASURAMESVARA TEMPLE, GUDIMALLAM, DISTRICT CHITTOOR.—The dilapidated portions of the brick compound wall of the temple were reconstructed and surface lime plastered. The ancient well was conditioned after desilting. The debris on the southern side was levelled up. All the loose sculptures and inscribed slabs at the site were fixed into low masonry pedestal raised against the western compound wall.

167. BUDDHIST REMAINS, AMARAVATI, DISTRICT GUNTUR.—The excavated brick structures around the *Maha-chaitya* were underpinned and extant tops watertightened. The brick courses of the drum and *pradakshinapatha* of the *chaitya* were re-laid and pointed. Debris at the north-east of the *stupa* was cleared, and channels were provided to drain out the rain water from the area after closing the excavated trenches.

168. BUDDHIST STUPA, BHATTIPROLU, DISTRICT GUNTUR.—The protected area around the monument was fenced with barbed wire.

169. ROCK-CUT CAVES, UNDAVALLI, DISTRICT GUNTUR.—The frontage of the caves was fenced with barbed wire. The stone pitching over the caves was consolidated, and the rock crevices were grouted with cement mortar and surface finished with coloured mortar matching with the original.

170. FORT, GOLCONDA, DISTRICT HYDERABAD.—Extensive debris clearance and consolidation of structural units within the Balahissar, Nagarkhana and guard rooms, *zanana* rooms, etc., were undertaken. The original plastered floors, drainage and water supply devices were exposed during the debris clearance. The sinking roofs of guard rooms were conserved by closing the arches and watertightening and resoling the roof surfaces. The disturbed stone-steps leading to *baradari* were rebuilt along with parapet wall. The old well near Nageenabagh was desilted and the retaining wall was further raised to arrest silting.

171. CHARMINAR, HYDERABAD, DISTRICT HYDERABAD.—In continuation of last year's work *(1973-74,* p. 77), the damaged stucco-decorations at different parts of the monument were remodelled as per the original by specially trained artisans. The terrace and floorings of *minar,* balconies and mosque area were re-laid. The exterior surface of the walls of the

south-western and north-eastern minarets and the top floors were lime-plastered matching with the original. The damaged floral and lotus bud motifs in stucco were restored and the intrados of the central dome was re-plastered matching the original.

172. AKKANNA-MADANNA CAVES, VIJAYAWADA, DISTRICT KRISHNA.—The debris overhead the caves was partly removed. The flaked off portions over the brow were removed and gaps filled with stone-jelly concrete and surface toned to match the original surface.

173. UMA-MAHESVARA TEMPLE, YAGANTI, DISTRICT KURNOOL.—The four entrances of the masonry tank were provided with collapsible iron gates to ensure safety of the sculptured panels in the tank. The tank was desilted and the cut-stone slabs over the balustrated steps and descents were reset. The inlet and outlets were conditioned. Flag-stones were provided in front of the temple and the broken flooring slabs within the *mukha-mandapa* were replaced. A huge Nandi carved out of a boulder was fully exposed to view.

174. NAVABRAHMA TEMPLE, ALAMPUR, DISTRICT MAHABUBNAGAR.—Debris clearance around the Arka- Vira- and Visva-Brahma temples was carried out exposing to view elaborate *jagati* of the temples. Several architectural members were found which can be used for structural conservation of the temples. The cracks in stone mouldings over the *sikhara* of Bala-Brahma temple were grouted and pointed. White-wash coats over the *sikhara* and side walls of the *mandapa* were carefully cleaned.

175. ROCK-CUT CAVES, BHAIRAVAKONDA, DISTRICT NELLORE.—Debris and accretionary stone revetment were removed bringing to prominence the cave-fronts. The ancient nullah in front of the cave was cleared from the accumulated boulders and debris to ensure proper flow of the stream. The rock surface was watertightcned after removing the earth from the voids and crevices of the rock. Extensive grouting work was carried out and ancient rock-cut drains were cleared and conditioned. The seepage of water into the caves was totally checked. The broken parts of sculptures and architectural members in the caves were restored by using steel dowels, clamps and treated with suitable tinted mortar mixed with the same rock-powder to match with the original. Approach pathways were relaid and the s\one pitching on the side terraces was pointed to arrest sliding. The pillar which was out of plumb in the first cave was reset to its original position.

176. KALYANA-MANDAPAM, UDAYAGIRI, DISTRICT NELLORE.—In continuation of the last year's work *(1973-74,* p. 77), the fallen portion of the compound wall near the *mandapa* and connecting *gopura* entrance was restored.

177. KRISHNA TEMPLE, UDAYAGIRI, DISTRICT NELLORE.—The compound wall of the temple was raised all around and fitted with a low barbed-wire fence on angle-iron posts to check trespassing. The voids in the brick masonry over the *sikhara* were filled up and water tightened. The area around the monument was cleared of debris.

178. RANGANAYAKULA TEMPLE, UDAYAGIRI, DISTRICT NELLORE.—In continuation of the last year's work *(1973-74,* p. 77), the debris at the outside *prakara* of the Ranganayakula temple was cleared and the plinths of the pillared *mandapas* exposed to view. The area in front of the monument was levelled and fenced with barbed wire.

179. MUKHALINGESVARA TEMPLE, MUKHALINGAM, DISTRICT SIUKAKULAM.----In continuation of previous year's work *(1973-74,* p. 77), the thick coat of lime-plaster accumulated over different parts of the main entrance in the second enclosure wall and several sub-shrines (pl. LXVIII), such as Yamesvara, Varunesvara, Indresvara, Agnesvara, Dandi Vinayaka and Parvati, was removed carefully, exposing highly ornate surfaces and sculptured niches. Similarly, later accretions, such as *mandapas,* and store rooms, obstructing the grand view of the minor shrines were also removed (pl. LXVII). Particular mention should be made of the *Sapta-martrika* shrine. These exposed reliefs were cleaned with plain water and the joints of the stones grouted with liquid cement-mortar and the recess-pointing done in toned mortar. The dislodged architectural mouldings over the *sikharas* were set back in position with the help of stainless steel clamps and dowels, after filling the voids and grouting the cracks in the stone masonry. The *amalakas* and *stupis* over the various *angalayas* were restored and given matching colour and finish.

180. ROCK-CUT CAVES, GUNTUPALLE, DISTRICT WEST GODAVARI.—The frontage of the caves was fenced with barbed wire. Approach steps were set in position. The voids and cracks over the main *chaitya-cave* were grouted with liquid cement. Debris clearance work was carried out in the central portion where structural votive *stupas* were partly exposed earlier.

Madhya Pradesh

181. PATALESVARA TEMPLE, MALHAR, DISTRICT BILASPUR.—The area around the temple was fenced with barbed wire, providing suitable gates. A sculpture-shed with corrugated tin sheets was constructed to house the large number of sculptures unearthed while clearing the area. The voids in the temple walls were filled and pointed with suitably tinted cement-lime mortar matching the original.

182. KESAVANARAYANA TEMPLE, SEORINARAYAN, DISTRICT BILASPUR.—A flag-stone flooring with proper sloping was laid after clearing the debris all around the monument exposing the basement of the temple. The low compound wall was raised to a height of 2 m to prevent trespassing.

SOUTH-WESTERN CIRCLE

Goa

183. ASSISSI CHURCH, VELHA GOA.—The peeled off plaster inside the church was replastered and the walls painted with oil bond distemper. The moss stains on the outer walls were removed and snowcem wash was given. Flooring was provided with concrete and plaster and also chiselled to bring out rock effect.

184. BOM JESUS CHURCH, VELHA GOA.—The worn-out laterite stones of the pilaster on the left side of the entrance of the church were removed and reset with fresh laterite stones. The inner walls and ceilings were painted respectively with acrylic emulsion and oil paints. The open area around the monument was fenced and a gate was provided.

185. LADY ROSARY CHURCH, VELHA GOA.—The inner and outer walls of the monument were plastered wherever necessary. The outer wall was washed with snowcem and the inner wall white-washed. The missing Mangalore tiles were replaced with new ones. The approach road to the church was improved.

186. MUSEUM BUILDING, VELHA GOA.—All the three halls on the first floor were provided with Marblex flooring to give a face-lift to the museum. The verandah of the first floor was provided with false ceiling.

187. SE' CATHEDRAL CHURCH, VELHA GOA.—The decayed plaster on the walls was removed and re-plastered. The outer walls were coated with snowcem-wash after removing the moss growth. The inner walls were painted with white oil bond distemper, whereas the wood work was also painted. Lateritic stone apron was provided on eastern and northern sides with a drain for draining off the rain water. Gates were provided on all the approach roads to the monument.

188. ST. AUGUSTINE CHURCH, VELHA GOA.—The vegetation growth on the tower and the ruins were uprooted and the debris was removed partly exposing the original flooring and wall.

189. ST. CAJETAN CHURCH, VELHA GOA.—The moss stains on the front wall were removed and snowcem-wash was given. The peeled off plaster was re-plastered and oil bond distemper wash was given. All the doors and windows were painted. The wooden flooring in the bell-tower was provided with new wood work. The southern outer face of southern bell-tower was re-plastered.

The roads within the archaeological area at Velha Goa were provided with seal coat.

190. ST. CATHERENE CHAPEL, VELHA GOA.—The moss stains and vegetation growth on the walls were removed. The inner walls were white-washed and wood work painted.

Kamataka

191. AUDIENCE HALL, FORT, BIDAR, DISTRICT BIDAR.—In continuation of the last year's work, the tops of the wall were pointed with cement mortar, keeping the sky line zigzag.

192. FORT, BIDAR, DISTRICT BIDAR.—Some portions of the stone wall of the citadel between the third and the fourth gates were repaired by underpinning and also by restoring the missing portions. Vegetation growth on the fortification wall was uprooted and the crevices were treated with tree-killer and sealed with cement mortar.

The battlements *(kanguras)* of the fort wall were plastered with fresh lime-cement mortar after removing the pulverized plaster. The missing battlements were also restored.

193. ROYAL HAMMAM, BIDAR, DISTRICT BIDAR.—The flooring of the hall was re-laid with polished Shahabad stone slabs and the walls were painted with distemper. The brick masonry pedestals encased with teak plywood were prepared for display of sculptures.

194. SOLAKHAMBA MOSQUE, BIDAR, DISTRICT BIDAR.—The walls were re-plastered with fresh lime-cement mortar. The decayed concrete flooring was re-laid with fresh lime concrete. The open area in fornt of the mosque was levelled and a layout for a proposed garden was completed.

195. GROUP OF MONUMENTS, AIHOLE, DISTRICT BIJAPUR.—A project work of providing drainage to drain out the stagnated rain water around Gaudar Gudi, Ladkhan temple, Ambigergudi, etc., is in progress.

The work of restoring the missing flag-stones of the pavement around Rachigudi, Huchappaiahmath, Charantimath, Jyotirlinga and Mallikarjuna temples, is in progress.

An enclosure wall of stone masonry in front of Ambigergudi was constructed to give better look to the monument.

The work of strengthening the roof portion inside the Durga temple is in progress.

All the loose sculptures in the protected area were shifted to the sculpture gallery.

196. GROUP OF MONUMENTS, BADAMI, DISTRICT BIJAPUR.—The work of providing cantilever stone-shed over the Pallava inscription is in progress.

The gateway of the North Fort was provided with new steps for easy approach to the fort. A garden was laid out in the area in front of the gateway.

The missing portions of the colonnade of the ancient tank at (Banasankari) Chaolachgad were restored.

All the loose sculptures in the protected area were shifted to the Sculpture Gallery.

197. ALI II RAUZA, BIJAPUR, DISTRICT BIJAPUR.—Seepage of water into the graves was prevented.

198. ASAR-MAHAL, BIJAPUR, DISTRICT BIJAPUR.—The damaged flooring of the main hall was removed and re-plastered matching with the original polished plaster flooring.

199. GOL-GUMBAZ, BIJAPUR, DISTRICT BIJAPUR.—The decayed concrete along with the rusted reinforcement was removed in patches in the dome, particularly near the squinches where the rain water was seeping, and was reinforced with fresh cement concrete under pressure. The squinches were given two to three coats of synthetic distemper of broken-white colour. Repairs to the *dalans* were attended to. Underpinning was carried out wherever necessary to the stone walls while joints were recess-pointed. Fallen portions of the enclosure wall were reconstructed to a length of 200 m on the southern side.

200. JAMI-MASJID, BIJAPUR, DISTRICT BIJAPUR.—The original markings on the Mughal type plastered flooring demarcating the spaces for prayers were missing at several places and the same were restored.

201. MULK-E-MAIDAN GUN, BIJAPUR, DISTRICT BIJAPUR.—The protected area was fenced with barbed wire.

202. GROUP OF TEMPLES, PATTADAKAL DISTRICT BIJAPUR.—The area around the Papanatha temple was cleared of debris and a direct pathway from the Virupaksha group of temples to the Papanatha temple was laid. The work of laying pipelines for water supply

to the garden and restoring of the missing portions of the plinth of Sangamesvara temple is in progress.

Expanded metal *jali* was provided to all the windows in the temples. The openings in the ceilings of Virupaksha, Mallikarjuna and Papanatha temples were provided with plastic glasses with teak wood frames.

A garden was laid in the area south of Virupaksha temple.

The work of cleaning the outer surface of the *sikharas* of the temples is in progress.

203. MAHADEVA TEMPLE, ITTAGI, DISTRICT RAICHUR.—The work of replacing the broken stone lintels and the capital of the pillars and re-laying the slabs of the flooring in Shrines 3 and 4 is in progress

The work of restoring the retaining walls on the northern and eastern sides of Mahadeva temple is in progress. Flag-stones were laid in the northern side of the temple.

The old compound wall on the north was dismantled and a new wall of stone masonry was constructed.

Maharashtra

204. FORT, DAULATABAD, DISTRICT AURANGABAD.—The decayed and fallen *burj* and walls were restored. Open area on either side of the entrance of the fort was levelled for car parking, etc.

205. GHRISHNESWAR TEMPLE, ELLORA, DISTRICT AURANGABAD.—Stone pavement was laid between *nagarkhana* and *mandapa.*

206. ROCK-CUT CAVES, ELLORA, DISTRICT AURANGABAD.—The undulations in the rock-cut flooring around the main sanctum, corridor and open space on either side in Cave 16 and Kailasa temple were filled up with cement concrete and the slippery rock surface of the flooring was chiselled wherever necessary matching the original. The accretionary masonry steps on the northern and southern sides were removed and the original rock-cut steps were exposed to view.

Underpinning was done to the cavities in the monolithic elephant. The missing rock-cut pillar of the south-western corner cell was restored by R.C.C. pillar matching the original.

The rock-cut drain was provided with covering slabs in R.C.C.

207. JOGESHWARI CAVE, BOMBAY, DISTRICT BOMBAY SUBURBAN.—The heavily weathered rock-cut pillars near the *garbha-griha* and in the. *ardha-mandapa* were conditioned with necessary reinforcement to match the original (pl. LXIX). Heavily weathered rock-cut door frames were underpinned with necessary reinforcements and the plain mouldings were reproduced. The uneven rock-cut flooring was levelled by chiselling. The crevices in the rock-cut wall towards the west of the *mandapa* were filled up.

208. ROCK-CUT CAVES, KANHERI, DISTRICT BOMBAY SUBURBAN.—The heavily weathered rock-cut benches and the platforms in the central hall of Cave 11 were conditioned with necessary reinforcement matching the original. The door-jambs, windows and pillars in the verandah were underpinned with necessary reinforcements. Capitals and bases of the pillars in Cave 3 were also repaired. The site around the burial ground was excavated and *harmikas* and inscriptions were discovered.

209. PATAN DEVI TEMPLE, PATAN, DISTRICT JALGAON.—Stone pavement was provided around the temple. The retaining wall in the south-western corner was extended for the protection of the temple from flood water. The debris accumulated on the back side of the temple was removed and the area levelled. .The plinth associated with Bhaskaracharya was provided with retaining walls on the northern and southern sides.

210. FORT, RAYAGAD, DISTRICT KOLABA.—The original features of the fort wall were brought to light after removing rank vegetation and the debris around the monument. The walls of the shop area were made watertight.

The rank vegetation and the debris were cleared from the Jagadisvara temple. The cracks in the walls were filled with cement mortar.

The dislodged stones of *minors,* Ashta Pradhan palaces, Ranivasa and Sachivalaya were restored and the cavities were filled with cement mortar.

Repairs, such as providing asbestos roofing, doors and windows, were carried out to Hathikhana to house a site-museum.

211. FORT, PANHALA, DISTRICT KOLHAPUR.—The fort walls were cleared of rank vegetation and trees.

212. GONDESHWAR TEMPLE, SINNAR, DISTRICT NASIK.—The debris around the temple was cleared and a number of sculptures, carvings and temple mouldings were brought to light. The collapsed compound wall around the temple was restored to its original height and watertightened. The damaged stone slabs on the southern entrance were replaced by R.C.G. slabs. The monument was electrified.

213. SHANWARWADA, PUNE, DISTRICT PUNE.—The decayed wooden members and lime-mortar concrete of the roof were removed and re-laid with fresh wooden members and lime-cement concrete (pi. LXX) providing proper slope for draining rain water. A few decorative pieces of old designs were prepared and reset wherever necessary as per the original. A parapet was provided on all sides.

214. SINDHUDURG FORT, MALWAN, DISTRICT RATNAGIRI.—The vegetation growth and big trees on the fort walls were removed without causing any damage.

215. VIJAYDURG FORT, VIJAYDURG, DISTRICT RATNAGIRI.—The debris of the fallen fort wall was removed and the wall restored. The tide water was kept away by constructing a 'Coffer Dam' while the work was in progress. Vegetation was removed from the fort walls.

WESTERN CIRCLE

Daman

216. CHAPEL OF OUR LADY ROZARIO. MOTI DAMAN, DAMAN.—The decayed lime-plaster from the pillars and walls as well as from the flooring was removed and re-plastered with cement mortar. The decayed doors and windows were also removed and replaced with Bulsar teak wood ones. The roof of Mangalore tiles was also dismantled and decayed rafters and broken tiles were replaced with new ones.

217. CHURCH OF HOLY JESUS, MOTI DAMAN, DAMAN.—Decayed plaster from the walls was removed and re-plastered. Cracks in the masonry walls were grouted.

218. FORT WALL, NANI DAMAN, DAMAN.—Vegetation on the walls was removed. The foundations were strengthened.

Gujarat

219. BABA LAULI MOSQUE, AHMADABAD, DISTRICT AHMADABAD.—The reconstruction of the damaged retaining wall which safeguards the mosque from the onslaught of floods is in progress.

220. THREE GATES, AHMADABAD, DISTRICT AHMADABAD.—New ashlar stones were fixed in place of missing and cracked ones. Lime-concrete was laid over the wooden ceiling of the gate. The iron grills were provided to the open arches of the ground floor.

221. RAUZA OF SHAIKH AHMAD KHATTU GANJ BAKSH, SARKHEJ, AHMADABAD, DISTRICT AHMADABAD.—The damaged portion of the stone flooring was repaired by resetting fresh stone slabs on a concrete cushion.

222. STEP-WELL, ADALAJ, DISTRICT GANDHINAGAR.—Damaged stone slabs of roof-cum-floor at different landing stages were removed and dressed fresh stone slabs were reset as per the original. A number of damaged lintels were also replaced and strengthened and the old corroded angle-iron supports were removed.

223. DWARKADHISH TEMPLE, DVVARKA, DISTRICT JAMNAGAR.—The southern porch which had been dismantled is under reconstruction with dressed and carved stone as per the original pattern.

224. SUN TEMPLE, MODHERA, DISTRICT MAHESANA.—The decayed pillars, capitals, brackets, etc., were removed and new ones duly dressed and carved to fix them in their original position. The *Sabha-mandapa* and the *Nritya-mandapa* were provided with freshly carved ornamental stones and the missing domes and ceilings were restored as per the original. Similarly, ornamental *kakshasana* stones, wherever missing and damaged, were provided.

225. BAVAMAN'S MOSQUE, PAVAGARH, DISTRICT PANCH MAHALS.—The tilted and dangerously-hanging ashlar masonry wall was dismantled and reconstructed.

226. MANDVI GATE, PAVAGARH, DISTRICT PANCH MAHALS.—The damaged and bulged ashler masonry curtain wall on the right side of the Mandvi gate was dismantled and reset as per the original.

227. SHAHR-KI-MASJID, PAVAGARH, DISTRICT PANCH MAHALS.—The missing *chhajja* stones as well as merlons were fixed with dressed and carved ones as per the original. The dome was watertightened by removing the earlier decayed material and re-laying cement-concrete layer of 10-cm thickness (pl. LXXI).

Rqjasthan

228. BAKSHI-KI-JAIL, FORT, CHITTAURGARH, DISTRICT CHITTAURGARH.—The out of plumb rubble stone masonry wall was dismantled and reconstructed in cement mortar.

229. BHAMASHAH HAVELI, FORT, CHITTAURGARH, DISTRICT CHITTAURGARH.—The damaged and uneven flooring was reset by providing new Manpura stones.

230. RATANSINGH TANK, FORT, CHITTAURGARH, DISTRICT CHITTAURGARH.—The out-of-plumb retaining wall on the southern side of the *ghat* was dismantled and recons tructed.

231. GROUP OF MONUMENTS, MENAL, DISTRICT CHITTAURGARH.—The enclosure wall of ashlar masonry which was out of plumb was dismantled to its foundation and recons tructed as per the original.

232. BAVAN DEORI TEMPLE, KUMBHALGARH, DISTRICT UDAIPUR.—The dead mortar of the dome was replaced by the fresh mortar. The *missing chhajjas* were restored with new dressed ones as per the original, and the bulged coping stones and cornices were removed and reset.

233. GOLERAO TEMPLE 2, KUMBHALGARH, DISTRICT UDAIPUR.—The dislocated ashlar masonry was dismantled after properly documenting and resetting as per the original.

234. SAS AND BAKU TEMPLES, NAGDA, DISTRICT UDAIPUR.—The bulged and out-of-plumb plinth of the northern side of the twin temples was dismantled and reset with new stones of the same variety as per the original.

MONUMENTS MAINTAINED BY THE STATES

ASSAM

1. MAGHNOWA TEMPLE, PADMAPUR, DISTRICT LAKHIMPUR.—The work of repairing the wet-rot-affected introdos of the temple is in progress.

2. BILLESWAR TEMPLE, BELSOR, DISTRICT KAMRUP.—The work of watertightening the *garbha-griha* was carried out.

GUJARAT The work of cleaning and conservation

was carried out at the following monuments:

3. VAGHAN DEVI (KADIA DUNGA), JHAJPOR, DISTRICT BHARUCH.

4. BRAHMA KUND, SHIHOR, DISTRICT BHAVNAGAR.

5. ADIKADI VAV, JUNAGADH, DISTRICT JUNAGADH (pl. LXXII).

6. EXCAVATED SITE OF NAGARA MOUND, PRABHAS PATAN, DISTRICT JUNAGADH.

7. KUND, KAPADVANJ, DISTRICT KHEDA.

8. STEP-WELL, KAPADVANJ, DISTRICT KHEDA.

9. STEP- WELL, MEHMEDABAD, DISTRICT KHEDA.

10. SHIV TEMPLE. KERA, DISTRICT KUTCH (pl. LXXIII).

11. SHAKTI KUND, AKHAJ, DISTRICT MAHESANA.

12. RAMJI MANDIR, PALODAR, DISTRICT MAHESANA.

13. GEBANSHA-NI-VAV, PAVAGADH, DISTRICT PANCH MAHALS.

14. KUND (KALESHWARI), LAVANA, DISTRICT PANCH MAHALS.

15. SHIKARMADHI (KALESHWARI), LAVANA, DISTRICT PANCH MAHALS.

16. GROUP OF TEMPLES, SANT, DISTRICT PANCH MAHALS.

17. JAIN TEMPLE 3, ABHAPUR, DISTRICT SABAR KANTHA (pl. LXXIV).

18. SHARANESHWAR TEMPLE, ABHAPUR, DISTRICT SABAR KANTHA (pl. LXXV).

19. SHIV TEMPLE, AGIYA, DISTRICT SABAR KANTHA.

20. SHIV PANCHAYATAN, BHETALI, DISTRICT SABAR KANTHA.

21. STEP-WELL, KIIED, DISTRICT SABAR KANTHA.

22. KUND, SABLI, DISTRICT SABAR KANTHA.

23. STEP-WELL, SHAMLAJI, DISTRICT SABAR KANTHA.

24. VIDYADHAR'S STEP-WELL, SEVASI, DISTRICT SABAR KANTHA.

KARNATAKA

25. ADINATHA BASTI, CHIKKAHANASOGE, DISTRICT MYSORE.—The work of repairing the Basti is in progress.

MAHARASHTRA

26. CHHATRI, BALAPUR, DISTRICT AKOLA.—An apron wall of coursed rubble masonry-was constructed on the river side to prevent erosion.

27. ROCK-CUT CAVES, PATUR, DISTRICT AKOLA.—The debris in front of the caves was cleared.

28. DAITYA SUDAN TEMPLE, LONAR, DISTRICT BULDANA.—The roof of the temple was watertightened and the flooring of the *sabha-mandapa* was paved with stones. A compound wall was constructed around the temple.

29. MOSQUE, ROHINKHED, DISTRICT BULDANA.—A compound wall in rubble masonry was constructed around the monument.

ORISSA

The work of cleaning and conservation was carried out at the following monuments:

30. INDRALATH TEMPLE, RANIPURJIIARIAL, DISTRICT BOLANGIR.

31. SOMESWAR TEMPLE, RANIPURJHARIAL, DISTRICT BOLANGIR.

32. TRILOCHANESWARA TEMPLE, KUNDESWAR, DISTRICT CUTTACK.

33. AGNESWARA TEMPLE, PITAPARA, DISTRICT CUTTACK.

34. GANJAM FORT, GANJAM, DISTRICT GANJAM.

35. SOMNATH TEMPLE, BLRABALABHADRAPUR, DISTRICT PURL

RAJASTHAN

The work of clearance and conservation was carried out to the following monuments:

36. GANESH TEMPLE, ATRU, DISTRICT KOTA.

37. RUINS OF TEMPLES, ATRU, DISTRICT KOTA.

38. AMBER PALACES, AMBER, DISTRICT JAIPUR.

39. DALA RAM GARDEN, AMBER, DISTRICT JAIPUR.

40. MUSEUM BUILDING, AMBER, DISTRICT JAIPUR.

41. HAWA MAHAL, JAIPUR, DISTRICT JIAPUR.

42. BUDDHIST CAVES, BINNAYAGA, DISTRICT JHALAWAR.

43. BUDDHIST CAVES, KOLVI, DISTRICT JHALAWAR.

44. GROUP OF TEMPLES, JHALRAPATAN, DISTRICT JHALAWAR.
45. MATAJI TEMPLE, GHATIYALA, DISTRICT JODHPUR.
46. JASWANT THARA, JODHPUR, DISTRICT JODHPUR.
47. DEVTAON-KI-SAL, MANDORE, DISTRICT JODHPUR.
48. DEWALS, MANDORE, DISTRICT JODHPUR.
49. RAWANA-KI-GHAURI, MANDORE, DISTRICT JODHPUR.
50. TOKESHWARA MAHADEO, MANDORE, DISTRICT JODHPUR.
51. JUJHARJI-KA-DEWAL, NEAR MALKOT FORT, MERTA, DISTRICT NAGAUR.
52. SUN TEMPLE, VARMAN, DISTRICT SIROHI.
53. MOTI MAGARI, UDAIPUR, DISTRICT UDAIPUR.
54. RING-WELLS, EXCAVATED SITE OF AHAR, DISTRICT UDAIPUR.

DC. EXPEDITION OUTSIDE INDIA

PRESERVATION OF BUDDHIST SHRINES AT BAMIYAN, AFGHANISTAN

STRUCTURAL REPAIRS.—The work of preservation of the Buddhist shrines at Bamiyan in Afghanistan was continued under the direction of Shri R. Sengupta. During the 1974 working season, a small team was sent to commence the preservation of the 'Big Buddha'. The problems of preservation of the Big Buddha were different from those tackled at the Small Buddha and required greater skill to deal with them properly.

During the year under review, the feet of the Buddha were exposed up to the original ground level by removing the accumulated debris. The door-sills of the side shrines all round the main niche (at the ground level) were found to be lower than the ground outside. It was felt that the floor level of the side shrines may be the original ground level. With a view to exposing it, digging was done in between the feet of the Buddha, which resulted in the exposure of the feet up to its original level. Thus the Buddha image has become 55 m high instead of 53 m known hitherto. During excavations around the image, plenty of clay sealings and wheat were obtained. Earlier, this place was walled up to be used as a granary for storing grains. It was the practice to seal it as and when grains were taken out. The sealings obtained gave the name of the storekeeper of the granary.

After exposure of the feet, the concealed portions were partially repaired and the broken portion of the ankles were stabilized (pl. LXXVI). The work of providing a drainage system at the top of rock-roof to drain out the snow-melt away from the facade of the Buddha-niche was taken up and is being continued. A big masonry wall (pl. LXXVII) was raised to divert the course of rain water on the top (east side) so as to avoid its falling along the main niche. It was observed that a portion of the east wall of the niche got disintegrated due to percolation of water and had fallen down.; hence, the necessity to divert the course of rain water.

X. ARCHAEOLOGICAL CHEMISTRY

TREATMENT OF MONUMENTS AND PAINTINGS

ANDHRA PRADESH

1. RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL.—Chemical treatment and preservation of sculptures in the *maha-mandapa* and the bracket figures, covering a total area of about 300 sq m was completed. The work involved removal of dust, lime-wash, soot and other accretions covering the figures and carvings. Teepol, ammonia and acetic acid were used. The cleaned sculptures were polished with a wax composition to restore their lustre. These black basalt sculptures were not only intricately carved but had a polished surface.

BIHAR

2. CARVINGS IN MUKHDUM SHAH'S TOMB, MANER, DISTRICT PATNA.—The carved ceiling of the verandah having geometrical and floral patterns was covered with algal growth and salt efflorescence and a coat of black accretions at several places. The salts were removed with paper pulp method; the black patches were cleaned with the help of an aqueous solution of trichloro-acetic acid. After completely cleaning, the surface was preserved with 3% polyvinyl acetate in toluene.

3. TERRACOTTA PLAQUES IN BUDDHIST STUPA, ANTICHAK, DISTRICT BHAGALPUR.—The friable plaques were in an advanced stage of decay due to heavy salt efflorescences. Salts were extracted as far as possible with the application of paper pulp, followed by consolida tion with 5% polyvinyl acetate solution in toluene. These terracotta plaques are on the sides of the *stupa* and receive a constant supply of soluble salts from the body of the *stupa* resulting in increasing friability of the figures. The salts are hygroscopic and keep the surface damp throughout the year.

DELHI

4. DEWAN-I-KHAS, RED FORT, DELHI.—The work of filleting, fixing, edging, filling and other repairs on the painted plaster in the monument was executed.

5. MARBLE SCREEN, RANG-MAHAL. RED FORT, DELHI.—Thick coatings of dust, fat and lime, disfiguring the marble screen, were removed with the help of chemicals and detergents on a part of the screen.

6. PAINTINGS IN THE GATE OF ARAB SARAI, NIZAMUDDIN, NEW DELHI.—Experimental work on the fragmentary and faded paintings in the niches of the gate was conducted, but with unsatisfactory result.

HIMACHAL PRADESH

7. PAINTINGS IN DUWONG GUMPHA, TABO MONASTERY, DISTRICT LAHUL AND SPITI-— Chemical treatment of paintings in the *pradakshina-patka* of the *gumpha* was resumed. The

paintings (pl. LXXVIII) which were covered with soot, coats of dust and mud stains have been properly cleaned with the help of organic solvents and preserved. Several patches of the painted plaster had to be repaired and fixed back to the carrier mud wall. Broken edges of the paintings were strengthened and consolidated. Cracks caused in the painted plaster as a result of earthquake in the valley were filleted. A total area of about 70 sq m was subjected to chemical treatment in the *pradakshina-patha* and in portions of Zelema (pl. LXXIX) and Gonkhong chambers comprising the entrance of the *gumpha.*

KARNATAKA

8. GHENNAKESAVA TEMPLE, BELUR, DISTRICT HASSAN.—Sculptures in canopies of different aisles and pillars in the interior and exterior of the temple were subjected to chemical treatment. The work, covering an area of about 350 sq m, involved removal of soot, hardened oil and lime-wash. Organic acids and teepol emulsifier were employed for the work. Polyvinyl acetate was used as a consolidant. Mohini figures and southern lintels were polished with wax.

9. PAINTINGS IN DARIA DAULAT BAGH, SRIRANGAPATNA, DISTRICT MANDYA.—Chemical treatment and preservation of the paintings in the central hall and ground floor was carried out. The paintings on the ceiling, executed on canvas ground, were loose and hanging in several places and had accumulated dust and dirt. Accretions and brown mud stripes were also seen on other painted walls of the central hall. Superficial dust, dirt, etc., were removed by soft brushing. Accretions and darkened preservative were removed by using chemicals like diacetone alcohol, cellosolve, morpholine and butyl lactate either individually or in combination according to the nature of accretions. A few drops of ammonia were also added to the above chemicals wherever necessary. Consolidation of loose paint film and fixing of loose and hanging painted canvas of the ceiling were carried out with solution of polyvinyl acetate in toluene. Filleting of loose painted plaster and colour matching of filleted portion were also done. Besides, the dusting of the paintings with soft feathered brushes was also continued. Cobwebs formed on the paintings were also removed. Methods are being developed for extermination of the insects by appropriate fungicide or by the use of insecticides.

10. KESAVA TEMPLE, SOMANATHPUR, DISTRICT MYSORE.—Half of the central *chuda* and several domes, pillars and *toranas* of the monument were subjected to chemical treat ment. The work involved removal of soot, white accretions and eradication of vegetation growth. A 3% solution of sodium pentachlorophenate was used as a fungicide and a solution of methyl methacrylate in toluene as a surface preservative. Calcareous accretion was softened and removed with the help of acetic acid.

11. KEDARESVARA TEMPLE, BELAGAVI, DISTRICT SHIMOGA.—Carvings and decorated motifs on the parapet wall around the *mukha-mandapa* and the inscription slabs were taken up for chemical treatment. They were cleared of moss, lichen and coatings of lime wash, and later given fungicidal treatment with sodium pentachlorophenate before application of polyvinyl preservative.

MADHYA PRADESH

12. PARSVANATHA TEMPLE, KHAJURAHO, DISTRICT CHHATRAPUR.—The sculptures

and carvings on the temple which were covered with accretions like thick coat of lime plaster, moss and patches of lichen are under chemical treatment.

13. ROCK-CUT CAVES, UDAYAGIRI, DISTRICT VIDISHA.—The inscriptions, carvings and sculptures which were covered with thick tufts of moss and lichen were chemically cleaned with ammoniacal water and given a preservative coat.

MAHARASHTRA

14. ROCK-CUT CAVES, AJANTA, DISTRICT AURANGABAD.—Cleaning of paintings on the northern wall of northern aisle in Cave 17 was taken up. The paintings (pl. LXXX) on this wall were having a thick layer of white accretion in a net-like pattern. From experiments on the painted surface and in the laboratory, it was observed that it is possible to remove the bulk of the accretion from the painted surface revealing the pigments underneath completely intact. The accretion is a composite type of deposit formed in several layers, comprising dust, smoke, decomposed bat excreta and perhaps resins. This is topped by a varnish layer containing shellac and other resins. The whitish accretion occurring on the resin layer was observed to contain inorganic constituents like phosphate, oxalate, etc. It is likely that these constituents have been derived from the excreta of bats. The result of experiments in chemical treatment of these paintings is quite encouraging in solving the problem of cleaning the painted surface. Sustained efforts are underway to develop more effective solvents for tackling resistant components of the accretion.

In Cave 16, en the west wall, a small patch of a painted surface (pl. LXXXI), covered with white chalkiness, was treated with a solvent mixture containing formic acid with good results. It is proposed to try this method further for its effect on the variety of accretion met with on different areas.

A large-scale chemical cleaning was carried out in Cave 6 for exposing the paintings on the walls and ceilings hidden under a layer of dark, tarry and sooty accretion along with dirt and dust. Technique for flattening up the ridges that have developed on the cracked painted surface was also evolved. During the course of cleaning, it appeared that an old coat of varnish is also likely to be present on some of the painted area. In fact, the paintings in this cave had been given up for lost, as the existence of a painted surface beneath the thick accretion was never envisaged. During the course of chemical treatment, figures of Buddha, geometrical designs, flora and fauna in various colours have been revealed under the accretion. The bulging plaster was fixed to the walls and ceilings and damaged edges were strengthened.

In Cave 10, during the course of experimental cleaning of an obscure painted surface on pillars 5 and 6, letters of an inscription, hitherto unknown, were uncovered. Besides, new painted figures, datable to the first-second century B.C. were also brought to light. The experiments conducted have so far not been completely successful since a hazy looking deposit on the painted surface has not completely responded to the chemical treatment. This deposit appears to have a major portion of inorganic constituents which do not yield to action of organic solvents even containing acetic and formic acids. It is proposed to employ stripping chemicals as a next step.

The collection of data regarding the relative humidity, temperature, rock and plaster moisture in various caves was continued for charting the moisture movements in the painted plaster and rock. In Cave 2, in the painted cells at the back of the cave, the tiny holes made by insects in the painted plaster were made good after insecticidal

treatment. A photographic record of the painted surface was prepared for keeping a watch on the development of the holes in the context of insect activity. The damaged painted plaster in Caves 10 and 6 was repaired and filletted wherever necessary.

15. ROCK-CUT CAVES, ELLORA, DISTRICT AURANGABAD.—The work of filleting, fixing and consolidation of loose and fragmentary paintings was continued in Cave 32. The small gaps having no paintings were filled up with plaster of Paris and colour matching was carried out. The loose and flaking pigment layer was attached to the ground with polyvinyl acetate solution.

ORISSA

16. ANANTA VASUDEV TEMPLE, BHUBANESWAR, DISTRICT PURI.—The work of removal of thick black tufts of moss and white and grey patches of lichen was taken up from the top of the *kalasa* to the lower levels with pleasing results. Some bearded growth of vegetation was removed by softening with ammonia solution.

17. MEGHESHVAR TEMPLE, BHUBANESWAR, DISTRICT PURI.—The front portion of the *jagamohana* of the temple was first taken up for treatment, as is easily accessible without the aid of scaffolding. Three faces, except the northern one, of the conical dome of *jagamohana* were cleaned with ammoniacal water to remove the moss and lichen. The work was also taken up from *kalasa* downwards and is in progress.

18. SIDDESHVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—In continuation of the last year's work, its lower portion was cleared of vegetational growth. Fungicidal and preservative treatment would follow. It is now cleaned of accretion (pl. LXXXII A).

19. SUN TEMPLE, KONARAK, DISTRICT PURI.—The temple which has an eroded surface due to sand blasting and has thick growth of moss and several patches of lichen was chemically treated. The work was mainly carried out on the third row, of *pidhas* (pl. LXXXII B) and vertical walls and also on the northern plinth and other parts of the temple. The northern side of the eastern vertical wall has been preserved with two coats of polyvinyl acetate in toluene. The work is in progress.

20. LAKSHMI TEMPLE INSIDE JAGANNATH TEMPLE, PURI, DISTRICT PURI.—The work of removal of ochre colour coating on the northern wall of the temple was taken up. The coating appears to contain some setting plaster. Considerable progress was achieved in cleaning the carvings.

PUNJAB

21. PUPIL MUSICIAN'S TOMB, NAKODAR, DISTRICT JULLUNDUR.—The work of cleaning of coloured tiles, painted plaster and wall paintings was continued and completed. The accretions of dust, moss and lichen and other extraneous matters like ochre wash and grease have been cleaned with the help of several organic solvents like ammonia, turpentine and methyl alcohol.

22. SHEESH MAHAL, PATIALA, DISTRICT PATIALA.—The work of fixing, edging, filling, filleting and other repairs on the painted plaster in the monument was executed.

RAJASTHAN

23. MAN SINGH'S PALACE, AMBER, DISTRICT JAIPUR.—The wall paintings were chemically cleaned and preserved.

24. RAJA BHAR MAL'S CHHATRI, AMBER, DISTRICT JAIPUR.—The paintings on the walls were chemically treated and preserved.

TAMIL NADU

25. KAILASANATHA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.—Inscriptions on the coarse-grained sandstone blocks in the Mahendravarman shrine of the temple were taken up for chemical preservation. The work involved removal of moss and lichen, extraction of soluble salts and consolidation of the friable surface of the stone. About 100 sq m of affected area was treated during the year with chemicals like ammonia, teepol, deter gent and resins.

26. MAHISHASURAMARDINI MANDAPA, MAHABALIPURAM, DISTRICT CHINGLEPUT.—Sculptures, pillars and panels in the central chamber of this monument are disfigured with soot, fine dust, moss, lichen and grease. Lime-wash had also been applied at a few places. Some areas of the stone have become friable on account of crystallization of soluble salts. Some cracks have also appeared on the panels. Chemical work was undertaken for preservation of these sculptures and filling up of the cracks.

27. PANCHAPANDAVA MANDAPA, MAHABALIPURAM, DISTRICT CHINGLEPUT.—The work of chemical treatment and preservation of the friezes over the entrance, lion-pillars and *adhishthana* portion was carried out this year. An area of 180 sq m was treated. The treatment involved removal of moss, lichen, vegetation-growth, etc., with 3% of ammonia and 3% of teepol in water. The area after treatment was given 3% solution of sodium pentachlorophenate as fungicide. A 3% solution of methyl methacrylate in toluene was applied as preservative and consolidant.

28. MINAKSHI SUNDARESVARA TEMPLE, MADURAI, DISTRICT MADURAI.—At the request of the authorities of the temple, some experimental work and preliminary treatment were carried out to the wall paintings around the Golden Lilly tank, depicting the wedding scene of Minakshi where the gold leaf was peeling off. Experimental work to bring out certain wall paintings hidden under thick lime-wash was carried out with encouraging results. Solvents like cellosolve, diacetone alcohol, turpentine, acetone, toluene, benzene and 1% solution of teepol in water as detergent were used for conducting experimental treatment work. A 3% solution of polyvinyl acetate in toluene was used as preservative for preserving the treated panels.

29. JAINA TEMPLE, TIRUMALAI, DISTRICT NORTH ARCOT.—Paintings on the outside walls of the cavern in the upper chamber of the temple were treated for removal of dusty and greasy accretion with the help of organic solvents like cellosolve, methyl and ethyl alcohol, etc. Extensive filleting with plaster of Paris and colour matching was also carried out. Loose painted plaster was refixed with polyvinyl acetate solution.

30. MARATHA PAINTINGS IN THE MAIN MANDAPA OF SUBRAHMANYA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—The paintings in this *mandapa* are thickly covered with dust, dirt, cobwebs, insect-nests, etc. Flaking of pigments on walls and paper was very extensive. Chemicals such as acetone, butyl-alcohol, triethanolamine were used for the removal of dust, dirt and other accretions. Loose pigments and paper were fixed with thick polyvinyl acetate solution after treatment. The painted panels were finally preserved with 3% solution of polyvinyl acetate in toluene. It was observed that the paintings are executed directly on the stone wall over a lime-coat. In some areas they have been executed on paper which has been pasted on the outlines of the paintings made on the wall.

UTTAR PRADESH

31. TAJ-MAHAL, AGRA, DISTRICT AGRA.—The marble walls of the water tank between the gate and the main platform were cleared of vegetation growth and pyritic stains as far as possible.

32. MARYAM ZAMANI'S HOUSE, FATEHPUR SIKRI, DISTRICT AGRA.—Old darkened preservative on the surface of the paintings in this monument was removed to clear the paintings of adhering dust and undesirable later accretion.

33. ZENANA PALACE, FORT, ALLAHABAD, DISTRICT ALLAHABAD.—The treatment of the paintings was resumed. From the surface of paintings, accretions of dust, dirt and greasy matter were removed with the help of solvents. Most of the solvents used were of organic nature and were harmless to the paintings.

34. ASVAMEDHA SITES, JAGATGRAM, KALSI, DISTRICT DEHRADUN.—The Asvamedha Site nos. 1 and 3, containing a number of inscriptions and brick structures, were found covered with vegetation growth. The roots of plant hyphae, moss and lichen which recur periodically are weakening the brick fabric rendering the surface friable. The accretion was removed very carefully with the help of ammonia and other chemicals and the bricks were preserved and strengthened on the surface.

35. RECLINING BUDDHA FIGURE, KUSHINAGAR, DISTRICT DEORIA.—The reclining figure of Buddha was taken up for chemical treatment and numerous loose and broken edges of the figures were properly fixed and filleted.

WEST BENGAL

36. RADHESHYAM TEMPLE, BISHNUPUR, DISTRICT BANKURA.—The chemical treatment of Radheshyam temple was continued this year also. The terracotta plaques on the southern vertical walls and the plain vertical walls were subjected to ammoniacal water treatment to render them free from moss and lichens.

37. PRATAPESHWAR TEMPLE, KALNA, DISTRICT BURDWAN.—In continuation of the last year's work (*1973-74,* p. 89), the temple was taken up for chemical treatment. The intncately-carved terracotta plaques with miniature figures of gods and goddesses on all the vertical walls were cleaned of moss and lichen followed by thorough washing with

water. The coloured panels in terracotta inside the arches were treated with a mixture of specific solvents like alcohol, turpentine, triethanolamine, etc., to bring out the original brightness. The entire surface of the temple was preserved with 5% poly vinyl acetate in toluene.

TREATMENT OF EXCAVATED OBJECTS AND MUSEUM EXHIBITS

Several sculptures in the Archaeological Museum at Hampi were cleaned of dust, grease, moss, tarry substances, lime-wash, pyritic stains and other disfigurements by using various chemicals like ammonia, acetic acid, oxalic acid, hydrogen peroxide, etc., and were thereafter given a coat of preservative. A number of canvas paintings and a paper painting in the Fort Museum, Fort St. George, Madras, were subjected to chemical treatment for the removal of old varnish which had become cracked and darkned with the passage of time, and had thus hidden the details and sharpness of the outline of the paintings. Besides, the paintings of Baron Wellington, Ratton, Installation of Nawab Gaus, Fort St. George, Queen Victoria and two noble ladies (paper paintings) were also treated and preserved. The loose pigments were fixed up with polyvinyl acetate before treatment. Chemicals like cellosolve, methyl alcohol,a cetone morpholine, benzene, etc., were used carefully taking precautions to avoid running of fugitive colours. Torn portions were mended by fixing fresh canvas pieces to arrest further disintegration with the help of chemical adhesive. After the completion of the treatment, mended portions were matched with the background colour. The paintings were finally preserved by applying a coat of mastic varnish.[1]

One hundred and seventy-eight works of art, including panel paintings, canvas paintings, decorative wooden pieces and wall paintings in the Archaeological Museum and the churches of St. Francis Assisi, Se' Cathedral and Basilica of Bom Jesus in Velha Goa were repaired, filleted, restored and retouched wherever necessary.[2]

Unique bronzes discovered at Diamabad, District Ahmednagar (Maharashtra), were subjected to initial work of chemical cleaning for removal of highly tenacious and thick incrustation (pis. LXXXIII and LXXXTV). A total number of two thousand five hundred and seven antiquities were chemically treated during the year. The antiquities include coins, bronzes, wooden objects, Akkadian clay seals, tablets and figurines, iron objects and other excavated finds from various sites.[3]

A number of stone images in the Museum organized by the Art Collection at Modesa were chemically treated and preserved.[4]

Sculptures, bronzes, wood-carvings and paintings in the various museums in Kerala were chemically treated. Zinc-silicofluoride was used for treating the wood-work, and the vegetation in the crevices in monuments was removed by the application of Arsenic.[5]

Three hundred antiquities from the excavated sites of Khurdi, Ahar and Noh, two hundred coins and oil paintings on canvas in the Government Museum, Bikaner, were chemically treated and preserved.[6]

[1] Information from the Chief Archaeological Chemist of the Survey.
[s] Information from the Chief Archaeological Chemist of the Survey.
[8] Information from the Chief Archaeological Chemist of the Survey.
[4] Information from the Director of Archaeology, Gujarat State.
[s] Information from the Director of Archaeology and Museums, Kerala State.
[6] Information from the Director of Archaeology and Museums, Rajasthan State.

ANALYSES AND RESEARCH

GEOCHRONOLOGICAL STUDIES.[1]—Heavy mineral analyses of soil specimens collected in 1973-74 from the excavated site at Purana Qila, New Delhi, were completed and a report was finalized. Soil specimens and stone implements collected from the excavated site at Kuchai, District Mayurbhanj (Orissa), were subjected to chemical and mechanical analyses and a report was prepared.

Rock and mineral specimens from various sites in Agra and Delhi, where important monuments are situated, were obtained after a proper survey, for the study of deterioration of ancient building material.

CHEMICAL ANALYSES.[2]—The contents of a storage jar from Arikamedu andiron nails and chisels from Warangal Fort were analysed for their identification and composition.

A few specimens of the so-called 'floating bricks' from Ramappa temple, Palampet (Andhra Pradesh), were taken up for investigation into the special physical characteristic features, such as grain, porosity, etc.

Investigations into the behaviour of synthetic resins as preservatives for painted surfaces were conducted at Ajanta in the field laboratory. The work of preparation of cross-sections of the paintings was continued. During the execution of work and investigation in the laboratory it was observed that the pigment layer underneath the whitish accretion disfiguring some painted walls in Caves 17 and 16 is fully intact. At some places double layers of the paintings were revealed in cross-sections. The result of the study of the data regarding the fluctuation in the humidity, moisture and temperature in the caves indicates that air-conditioning of the caves may net be required.

1. Information from the Chief Archaeological Chemist of the Survey
2. Information from the Chief Archaeological Chemist of the Survey.

XI. ARCHAEOLOGICAL GARDENS[1]

ANDHRA PRADESH

1. HILL-TOP, NAGARJUNAKONDA, DISTRICT GUNTUR.—The garden was maintained properly, and steps are being taken to improve water supply and the garden proper.

BIHAR

2. EXCAVATED REMAINS AND ARCHAEOLOGICAL MUSEUM, NALANDA, DISTRICT NALANDA.—The garden was maintained properly, and the boring work was taken up by the Haryana State Boring Corporation to augment water supply.

DELHI

3. RED FORT, DELHI.—The garden was maintained in excellent condition throughout the year. More annual beds, cannas, roses were introduced which were in full bloom during the season. All the seasonal operations were attended to. Lawns, shrubs, hedges etc., were maintained well. The fountains were operated in the Rang-mahal area during the visit of V.I.P.'s and *Son-et-lumiere* shows.

4. ARAB-KI-SARAI AND MANDI, NEW DELHI.—The garden was kept neat and clean during the year under review.

5. HAUZ KHAS, NEW DELHI.—The garden was maintained properly throughout the year

6. HUMAYUN'S TOMB, NEW DELHI.—Old lawns which were full of weeds etc., were re-turfed. The garden was maintained properly throughout the year. All the annuals, roses, cannas were in full bloom during the season. All the seasonal operations were attended to. Shrubs were given proper trimming and varieties of rare shrubs were introduced which increased the beauty of the garden. Hedges and lawns were trimmed and mowed. Picnic spots were beautified in the Jungli Bagh area.

7. HUMAYUN'S TOMB NURSERY, NEW DELHI.—The nursery was kept in presentable condition throughout the year. Both the glass-house and the chick-house were kept neat and clean. Pot plants were transplanted and properly maintained. In the lower nursery, the propagation of various shrubs, roses, cannas, were completed. Roses, ornamental shrubs, bougainvillaea etc., were collected from many parts of the country and propagated further and supplied to various gardens of the Survey for plantation. Rose-beds, cannas and annuals were in full bloom during the season.

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[1] Information: 17, 18, from the Director of Archaeology, Government of Gujarat; 34, 35, from the Director of Archaeology, Government of Kerala; 40, 41, from the Assistant Director, Cultural Affairs, Government of Orissa; 42, 44-47, from the Director of Archaeology and Museums, Government of Rajasthan; and the rest from' the Chief Horticulturist of the Survey.

8. JANTAR-MANTAR, NEW DELHI.—The garden was maintained properly and kept in a presentable condition throughout the year. Annual beds, roses, cannas, jasminums were in full bloom during the season.

9. KHAIRU'L-MANAZIL (SHER SHAH GATE), NEW DELHI.—The garden was kept in presentable condition throughout the year. Roses, cannas, bougainvillaea and annuals were in full bloom. Tree plantation along with the boundary wall was completed. Lawns and rockeries were maintained well. Roads and paths were kept clean.

10. KHAN-I-KHANA, NEW DELHI.—The garden was kept in good condition. Annuals, cannas and roses were in full bloom. Lawns were mowed and hedges were trimmed. All seasonal operations were attended to.

11. KOTLA FIRUZ SHAH, NEW DELHI.—Old lawns which were laid out in early fifties were re-turfed. Lawns, hedges and shrubs were maintained properly. Annuals, roses and cannas were in full bloom. The garden was kept neat and clean. Submersible pump was installed in the *bowri* to augment water supply.

12. LODI TOMB, NEW DELHI.—The garden was maintained properly after attending to all the seasonal operations. Annuals, cannas and roses were in full bloom.

13. NAJAF KHAN'S TOMB, NEW DELHI.—Laying out of the garden is in progress and necessary plantation has been done excepting the roses which will be done after the rains.

14. PURANA QILA, NEW DELHI.—Two more hectares of land was brought under gardening operation after removal of jungle-growth, stones, etc. New annual beds were introduced and cannas, roses etc., were planted in beds. Tree plantation was also done. Annuals, cannas and roses were in full bloom during the season. The garden was kept in a good condition all through the year. The total area under gardening is 10-1 hectares.

15. QUTB-MINAR, NEW DELHI.—Two more hectares of land was brought under gar dening after clearance of jungle-growth and stones. Jungli Bagh area was beautified. More annual beds, bougainvillaea, cannas and roses were introduced and were in full bloom. The garden was in presentable condition throughout the year.

16. SAFDARJUNG'S TOMB, NEW DELHI.—Old lawns which were infested with rank weeds and grass were re-turfed. Annuals, cannas and roses were in full bloom. Jasminum shrubs were properly maintained. The garden was kept neat and clean throughout the year.

GOA

17. ARCHAEOLOGICAL AREA, VELHA GOA.—Due to the Exposition Ceremony of St. Francies Xavier's body, which took place from November 1974 to February 1975, elaborate arrangements were made and several gardening works costing more than two lakhs of rupees were undertaken.

The original lawns which were laid out during 1964 were re-turfed with Calcutta *dhoob* grass. The existing small well in St. Gajethan area was enlarged to augment water

supply. The area around Bom Jesus Church was taken up for developing a garden which has enhanced the beauty of the surroundings.

Much of the archaeological area has been landscaped and only a small portion towards the north-east comer of the Se' Cathedral remains to be developed. The work of landscaping the survey no. 10 towards the north-east corner of Se' Cathedral is in progress.

Two booster pumps for the functioning of the fountains and to illuminate them in the nights were installed. Two cabin rooms for the safety of the meters of the pump-sets were also constructed. The area around the fountains were enclosed with ornamental grill.

It is proposed to instal an ejecto jet pump to maintain the garden around the Bom Jesus, as was done earlier with the help of P.W.D. water supply.

GUJARAT

18. KUND AND STEP-WELL, KALESHWAR, DISTRICT PANCH MAHALS.—A garden around the monuments was developed without disturbing the environment.

19. GABALSHA-KI-VAV, PAVAGADH, DISTRICT PANCH MAHALS.—A garden around the monument was developed without disturbing the environment.

JAMMU AND KASHMIR

20. MARTAND TEMPLE, DISTRICT ANANTANAG.—Laying out a garden around the monument is in progress and the front portion is ready for turfing.

KARNATAKA

21. ALI II ROUZA, BIJAPUR, DISTRICT BIJAPUR.—The garden was maintained in a presentable condition during the year under review. The work of implementing some changes in the garden is in progress.

22. ARQUILLA, BIJAPUR, DISTRICT BIJAPUR.—The garden was maintained satisfactorily throughout the year.

23. ASAR-MAHAL, BIJAPUR, DISTRICT BIJAPUR.—The shrubberies etc., were main tained in good condition. The lawns were maintained in a presentable manner. It is proposed to take up re-turfing during the next financial year.

24. GAGAN-MAHAL, BIJAPUR, DISTRICT BIJAPUR.—The garden was maintained in a proper condition.

25. GOL-GUMBAD, BIJAPUR, DISTRICT BIJAPUR.—Re-turfing the lawns on the upper *khatta* was completed. Laying out the plant conservatory-cam-propagation beds was also completed. The work was initiated for excavating large number of pits in order to have a deep arboretum on all the sides leaving the central ornamental garden. The garden was kept in a presentable condition throughout the year.

26. IBRAHIM ROUZA, BIJAPUR, DISTRICT BIJAPUR.—The garden was maintained properly during the year under review.

27. JAMI-MASJID, BIJAPUR, DISTRICT, BIJAPUR.—The outer area developed during the previous year was maintained effectively, and in the inner area some minor changes effected to beautify the garden. The garden as a whole was kept in an excellent condition.

28. JOD-GUMBAD, BIJAPUR, DISTRICT BIJAPUR.—The garden was maintained properly throughout the year.

29. SIKANDAR SHAH'S TOMB, BIJAPUR, DISTRICT BIJAPUR.—The relaid garden during the previous year was maintained properly.

30. HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—Horticultural operations started during the previous year in 12 hectares of land towards the eastern side of the garden were completed. The entire garden was maintained properly.

31. DARIA DAUI.AT BAGH, SRIRANGAPATNA, DISTRICT MANDYA.—The garden was maintained in a satisfactory manner, and the laying out of rose garden is in progress.

32. GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA.—Reorientation of the garden, based on *charbagh* system, was completed. Ornamental shrubberies were planted with Michelia Champa trees, underneath which crotons were planted. Plants like Polyalthia Pendula, Biota Compacta, upright cypress etc., were planted. Laying out of orchard on all the four sides is in progress. The work involves massive movement of soil, for which tractors, trailers and bulldozers are to be engaged. Preliminary operations are completed and all the necessary plants are purchased for planting them in the forthcoming rainy season.

33. KESAVA TEMPLE, SOMANATHPUR, DISTRICT MYSORE.—Laboratory tests of the soil of the outlived lawns have revealed that the soil is extremely alkaline where the Ph value ranges from 9 to 9'3. It was, therefore, suggested by the chemists that heavy doses of gypsum should be added followed by the incorporation of a very heavy dose of organic manure. Horse gram was sown as a green manure and the entire foliage was incorporated in the soil. This operation has substantially changed the structure of the soil. Later on, re-turfing was done with Calcutta *dhoob,* and the grass has come up very well. The garden as a whole was maintained in a satisfactory condition.

KERALA

34. KRISHNAPURAM PALACE MUSEUM, KRISHNAPURAM, DISTRICT TRIVANDRUM.—The garden around the monument was maintained satisfactorily, and suitable plants and shrubs were planted in the garden.

35. PADMANABHAPURAM PALACE MUSEUM, PADMANABHAPURAM. DISTRICT TRIVANDRUM.—The garden around the Palace was maintained properly throughout the year.

MADHYA PRADESH

36. ARCHAEOLOGICAL AREA, KHAJURAHO, DISTRICT CHIIATARPUR.—All the lawns, annual beds, cannas and roses were in full bloom. All the seasonal operations were attended

37. ARCHAEOLOGICAL AREA, BURHANPUR, DISTRICT KHANDWA.-—The garden was kept in good condition during the year under review. Annuals, cannas and roses were in full bloom. All the seasonal operations were attended to.

MAHARASHTRA

38. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—Re-turfing with Calcutta *dhoob* of all the thirty-two plots inside the Maqbara area was taken up and completed. Some simple beds were laid out. Peripheral plantation is in progress.

39. FORT, SHANWAPWADA, PUNE, DISTRICT PUNE.—The garden was maintained in good condition.

ORISSA

40. LAKSHMESWAR GROUP OF TEMPLES, BHUBANESHWAR, DISTRICT PURL—The garden was improved by planting flower trees, by providing benches for visitors and by constructing artificial water storage tanks.

41. ARCHAEOLOGICAL AREA, KENDULI, DISTRICT PURL—-The garden was improved by planting flower trees, by providing benches for visitors, and by constructing artificial water storage tanks.

RAJASTHAN

42. AKBAR'S FORT, AJMER, DISTRICT AJMER.—The garden was maintained properly and steps were taken to beautify it.

43. ANNA-SAGAR BARADARI, AJMER, DISTRICT AJMER.—The garden was kept in a presentable condition and the annuals, cannas and roses were in full bloom during the seasons.

44. CHAMAN-BAGICHI, BIIARATPUR MUSEUM, AJMER, DISTRICT AJMER.—The garden was maintained properly and steps were taken to beautify it.

45. DIG-PALACE, DIG, DISTRICT BHARATPUR.—All beds of cannas, jasminums, roses and annuals were in full bloom. Many varieties of roses and shrubs were propagated and supplied to the Survey gardens at Delhi and Agra. All lawns, hedges and shrubs were kept presentable by trimming them at regular intervals. The turbine pump installed in a well, near the Singhpole Gate, was commissioned. Fountains were played on festive occasions and on the occasions of the visits of V.I.P.s.

46. JALEB-CHOWK, AMBER, DISTRICT JAIPUR.—The garden was maintained properly throughout the year, and steps were taken to beautify it.

47. PALACES, AMBER, DISTRICT JAIPUR.—The garden was maintained properly during the year, and steps were taken to beautify it.

48. JANTAR-MANTAR, JAIPUR, DISTRICT JAIPUR.—The garden was properly main tained throughout the year.

UTTAR PRADESH

49. ITMAD-U-DAULLA'S TOMB, AGRA, DISTRICT AGRA.—Re-turfing of the lawns was done.

50. FORT (INNER), AGRA, DISTRICT AGRA.—A pump-set was procured for augmenting the supply of water for the garden.

51. FORT (OUTER), AGRA, DISTRICT AGRA.—Iron-poles were fixed to fence the archaeological area.

52. KHAN-E-ALAM NURSERY, AGRA, DISTRICT AGRA.—A tube-well was bored by the U.P. Government Tube Well Division for the supply of water to the fountains in the Taj-mahal.

53. MARIUM'S TOMB, AGRA, DISTRICT AGRA.—Some of the lawns were re-turfed. Water problem was solved by installing V.T. pump in one of the wells.

54. TAJ-MAHAL, AGRA, DISTRICT, AGRA.—Preparations are being done for re-turfing the lawns. Arrangements were done to instal pump set for regular water supply to the garden.

55. AKBAR'S TOMB, SIKANDRA, DISTRICT AGRA.—The work of fencing the area in the forecourt was completed. The surroundings were made more attractive by introducing bougainvillaea of different colours. The work for the improvement of the Deer Park in the rear has been taken up, and re-turfing is in progress. Arrangements have been done to instal a generating set to give power to the different pumping sets in case of failure of electricity.

56. ARCHAEOLOGICAL AREA, KUSHINAGAR, DISTRICT DEORIA.—The work of boring a well was completed. Clearing work is in progress.

57. NADAN-MAHAL, LUCKNOW, DISTRICT LUCKNOW.—A garden was laid out in this newly-acquired monument. The work of boring a well is in progress and a pump set has been installed.

58. ARCHAEOLOGICAL AREA, RESIDENCY, LUCKNOW, DISTRICT LUCKNOW.—The plots were re-turfed.

XII. PUBLICATIONS

PUBLICATIONS OF THE SURVEY

1. INDIAN ARCHAEOLOGY—A REVIEW.—The issue for *1968-69* was published.

2. GUIDE BOOKS.—Guides to *Khajuraho* (fourth edition) by K. Deva, *Old Goa* by S. Rajagopalan, *Rajgir* (revised fifth edition) by M. H. Kuraishi (revised by A. Ghosh), and *Sanchi* (Hindi, second edition) by D. Mitra, were brought out.

3. PICTURE POSTCARDS.—The following picture postcards sets were printed: Elephanta caves; Gingee; Halebid; Konarak; Somanathpur; Sringeri; Brihadisvara temple, Thanjavur; and Warangal, Hanamkonda and Palampet.

OTHER PUBLICATIONS

BIHAR.—The Chandradhari Museum, Darbhanga, undertook the publication of the Muslim Coin Catalogue.

KARNATAKA.—The Directorate of Archaeology and Museums in Karnataka, Mysore, published *Excavation at Hemmige,* by M. Hanumantha Rao and S. Nagaraju.

MAHARASHTRA.—The Universities of Nagpur and Marathawada brought out *Excavations at Bhokardan* by S. B. Deo.

ORISSA.—A consolidated volume of the *Orissa Historical Research Journal,* besides *Descriptive Catalogue of Oriya Manuscripts,* vol. IX. and *Alphabetical Catalogue of Sanskrit Manuscript* were brought out.

RAJASTHAN.—The Department of Archaeology and Museums in Rajasthan, Jaipur, published volumes XII-XIII of the Departmental Bulletin *The Researcher,* besides a Hindi pubication *Tuga Yugon Men Rajasthan—Sikkon Ke Madhyam Se.*

UTTAR PRADESH.—The Directorate of Archaeology and Museums in Uttar Pradesh, Lucknow, brought out a special number of the Bulletin of *Museums and Archaeology in Uttar Pradesh,* vol. XIII.

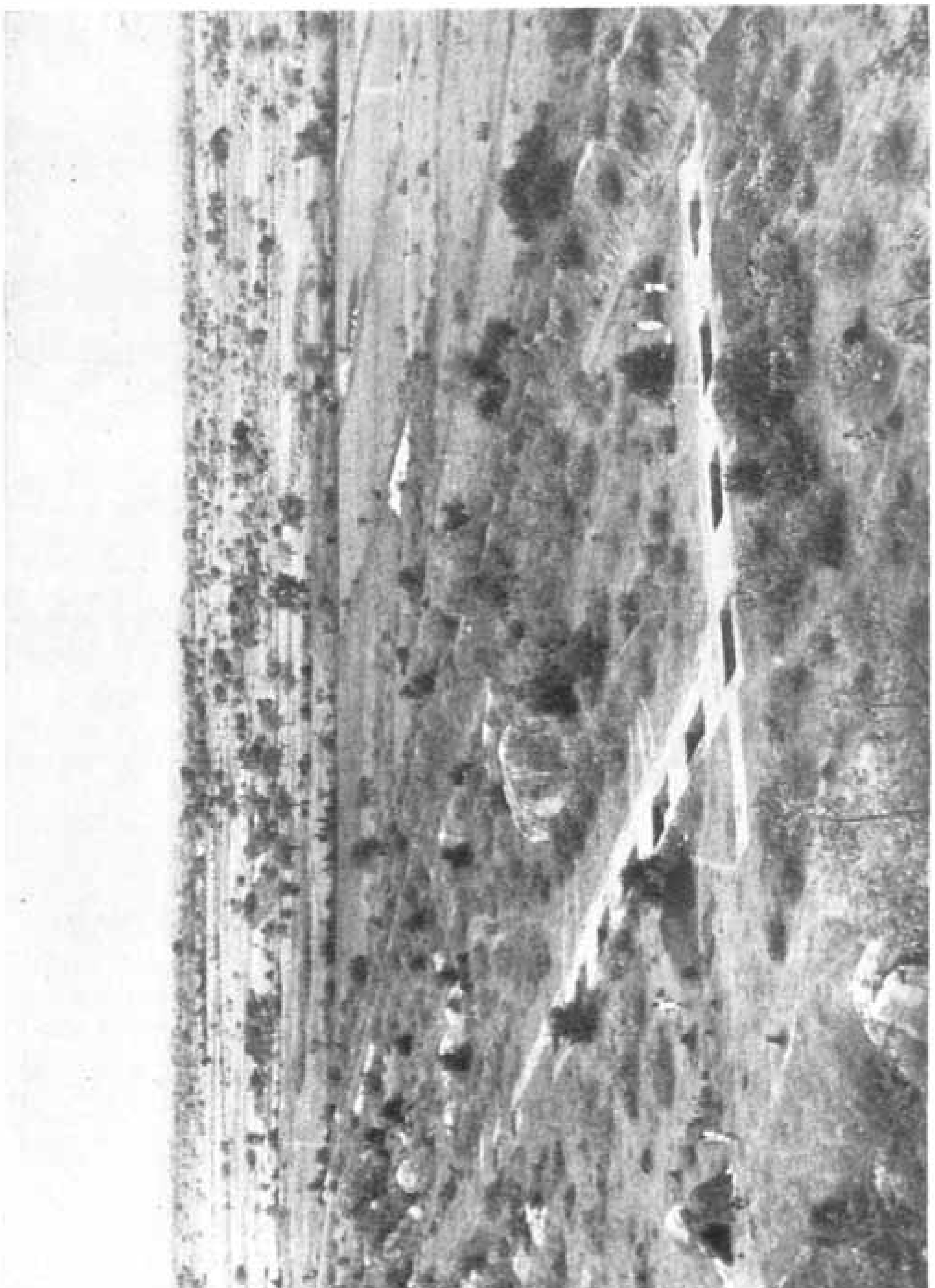


A



B

Dhulikatta : A, *terracotta figurine*; B, *slab encasing stupa with Naga Muchilinda and stupa in panels.* *See p. 2*



Polakonda : general view of excavation. *See p. 5*

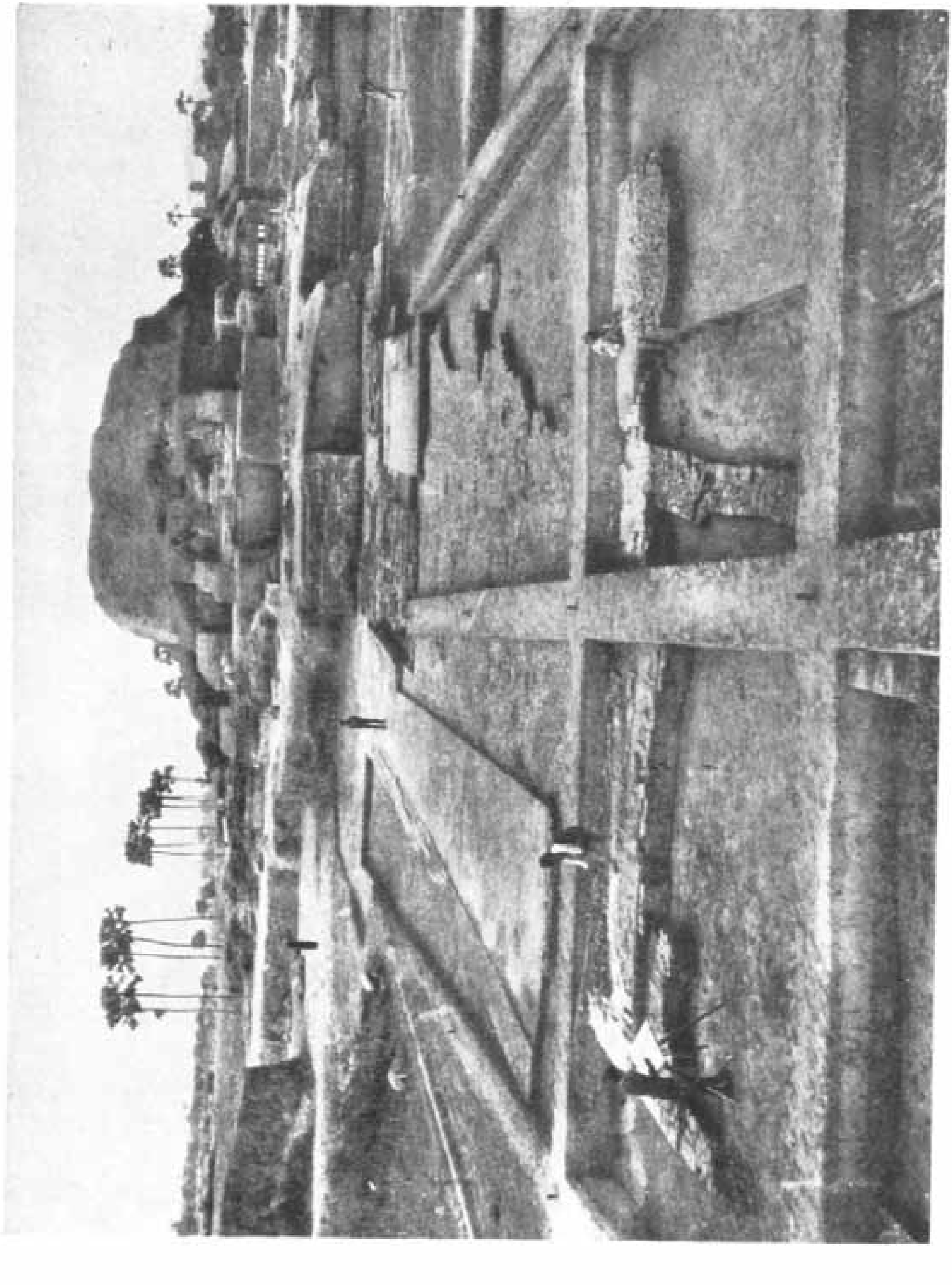


A



B

Antichak : A, *exposed passage with brick-paved flooring in the southern wing of the monastery* ; B, *mutilated sitting Buddha on pedestal*. *See p.* 6



Antichak : General view of the pathway between central shrine and northern gate. *See p. 6*



B



A

Antichak : images in limestone. A, Vishnu and B, Kaumari. *See p. 7*



B



A

Antichak : images of A, Ganesha and B, Simhanada. *See p. 7*



B



A

Antichak : images of A, Parvati and B, images of Buddha. *See p. 7*

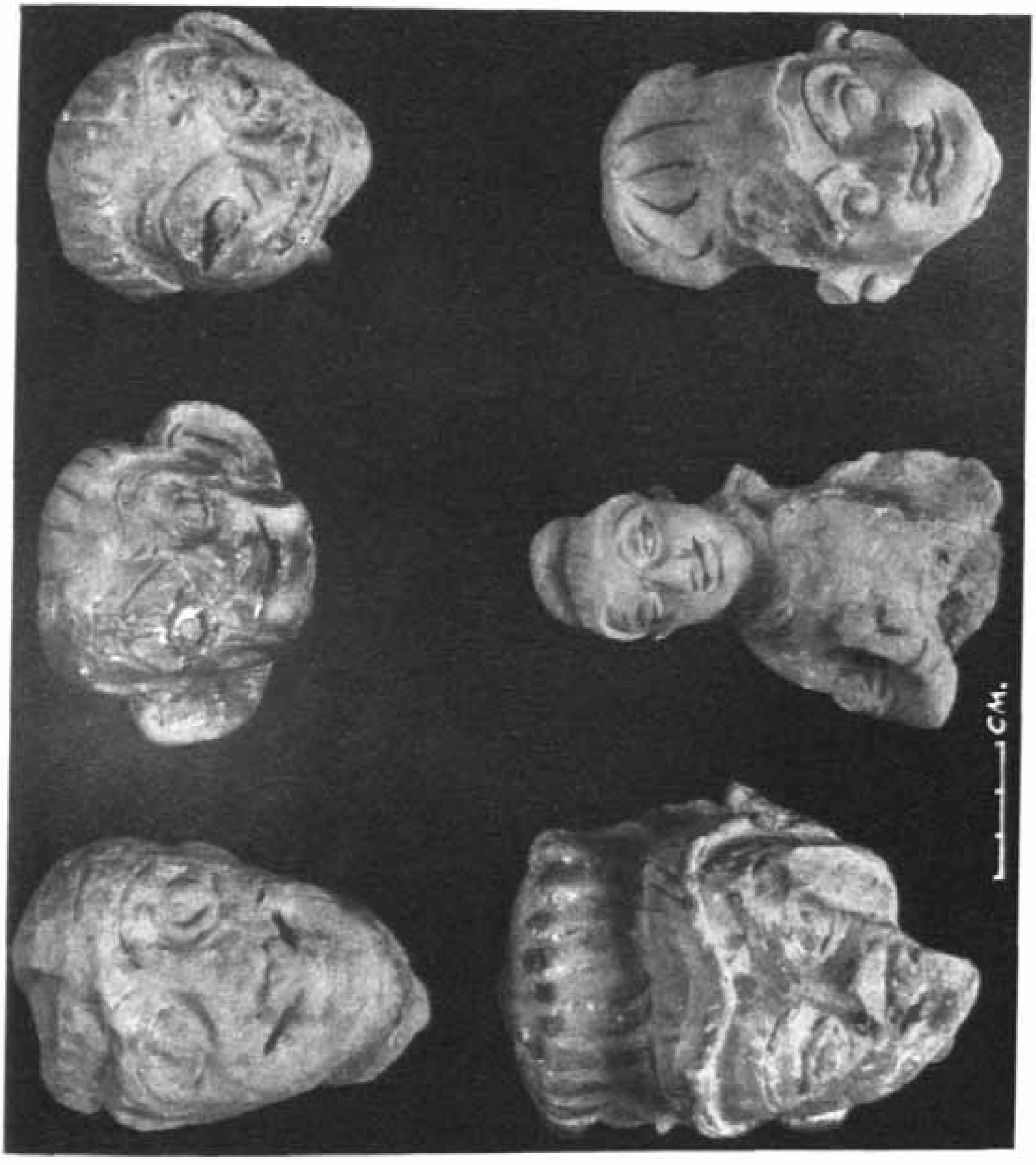


A



B

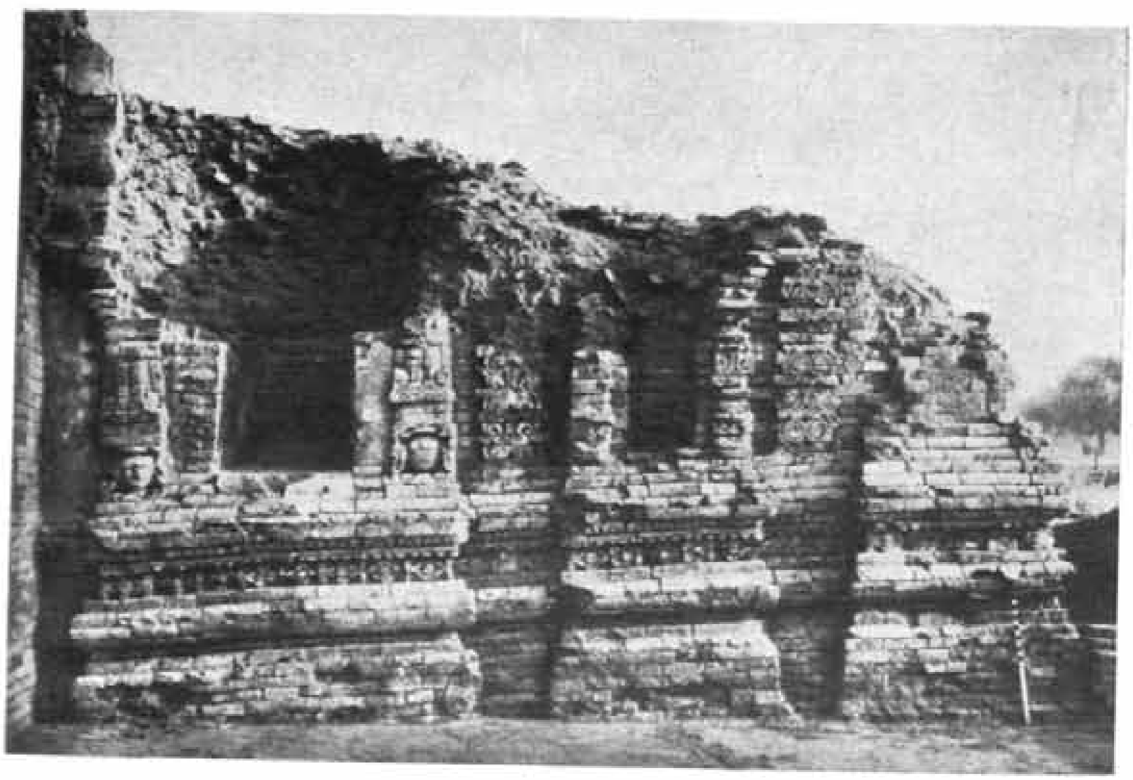
Antichak : images of A, *Sadyojata and* B, *images of Avalokiteswara.* *See p. 7*



Antichak : terracotta human heads. *See p. 7*

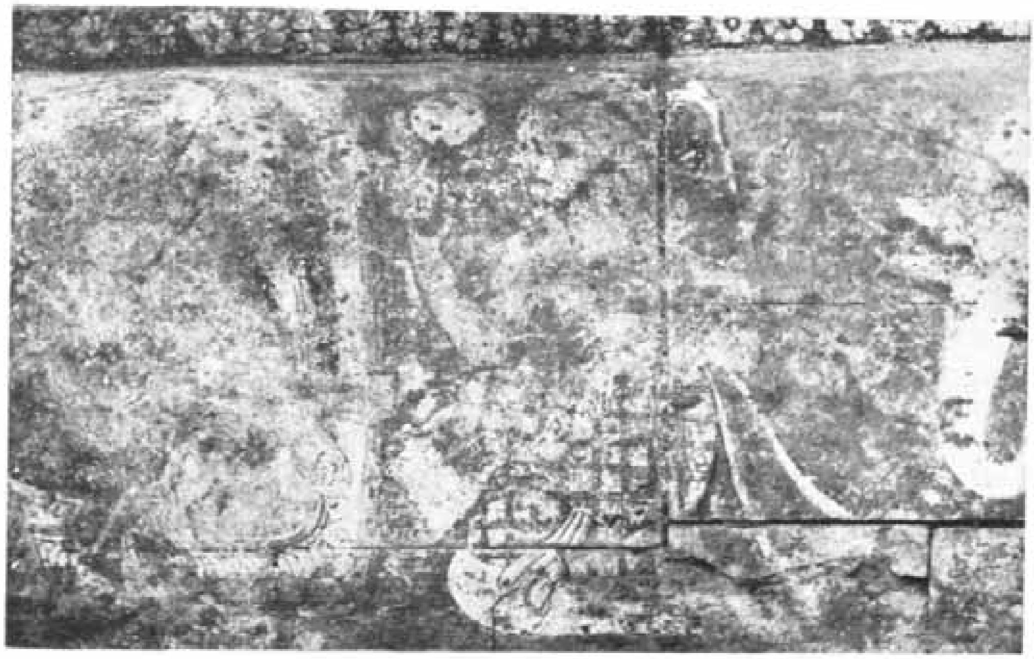


A



B

Nalanda : exposed temples at Sarai mound. *See p. 8*

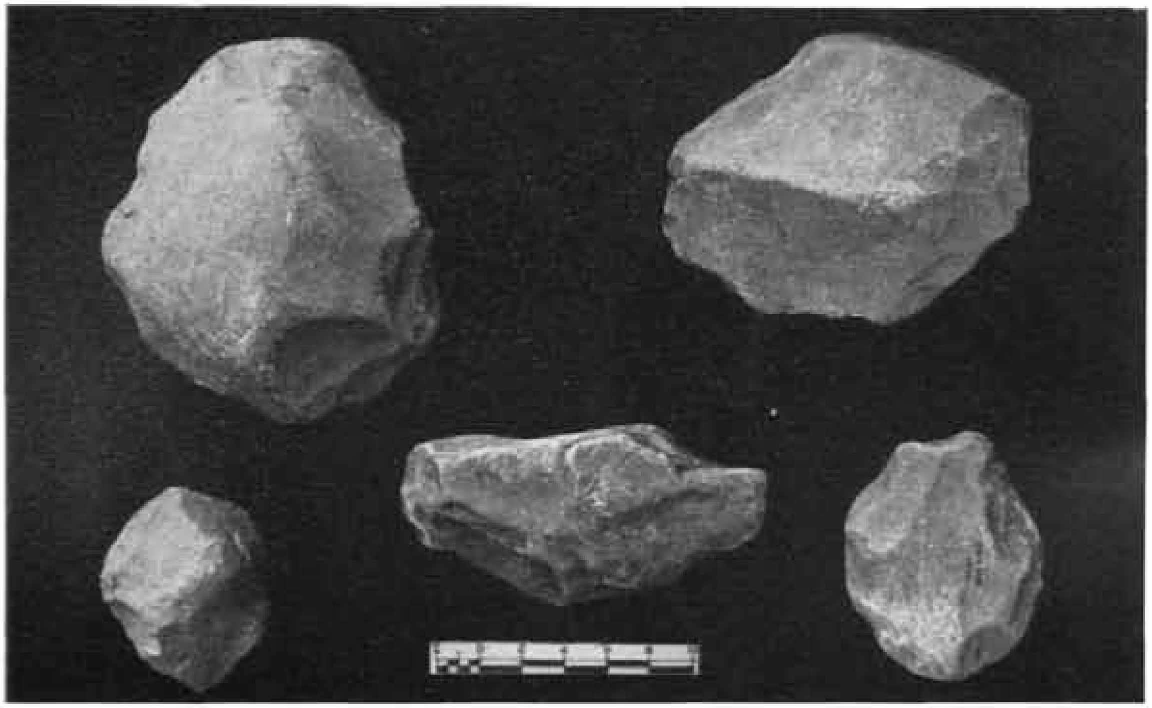


A



B

Nalanda : exposed paintings on stone pedestal at Sarai mound. *See p. 9*



A



B

A, *Ghoranagi and Jayada : Lower Palaeolithic tools*; B, *Ghoranagi : neolithic celts and mace-head.* *See p. 9*

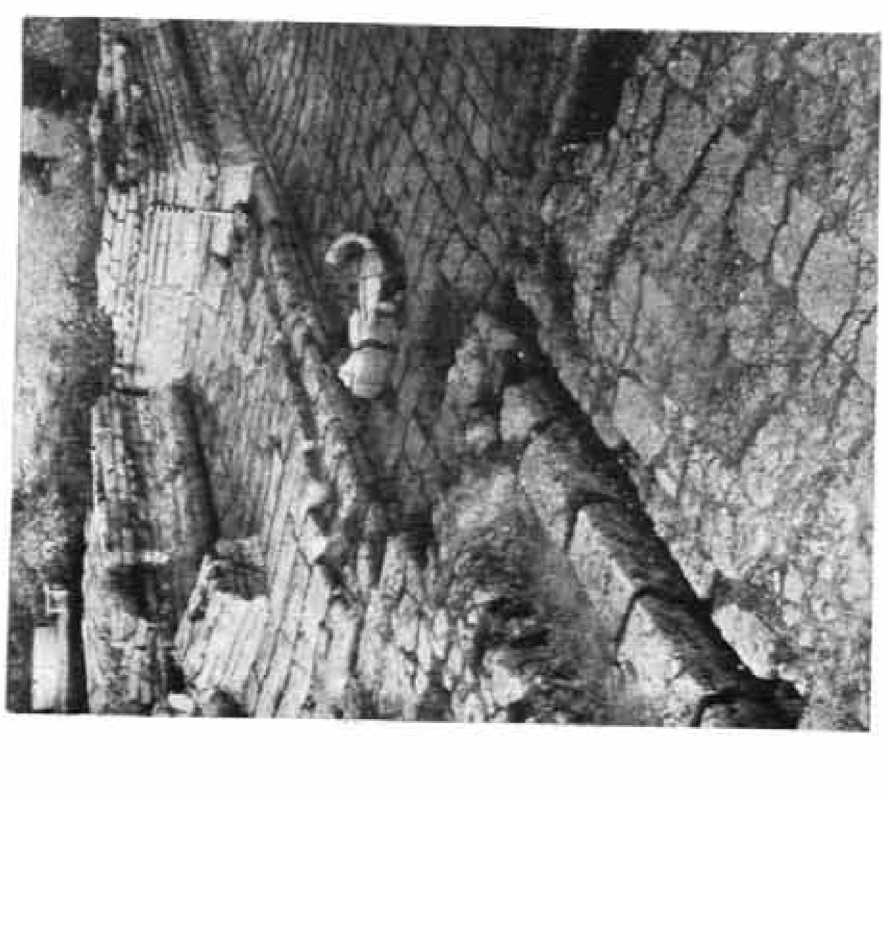


A

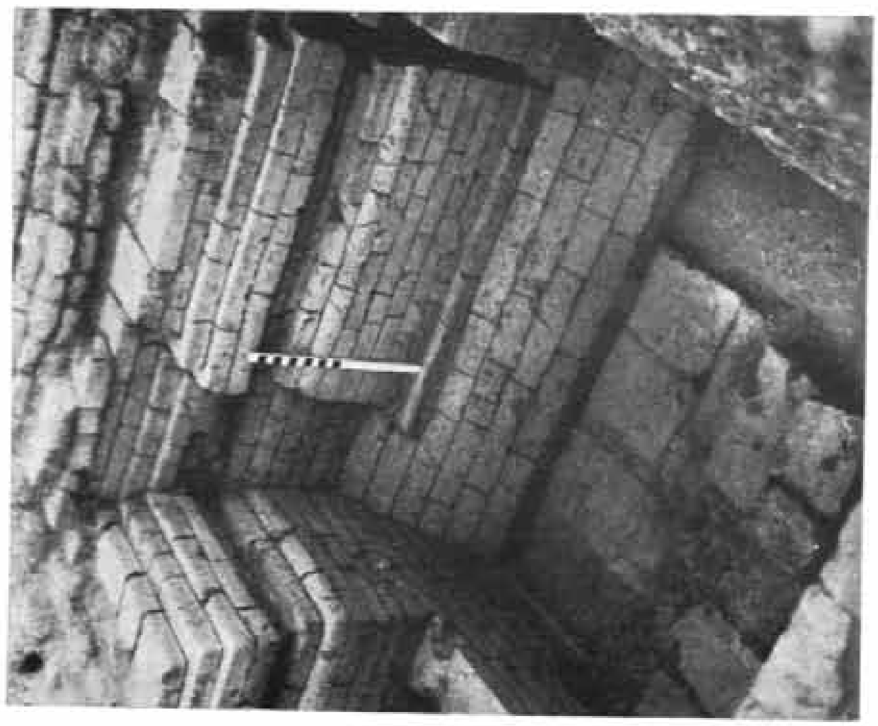


B

Champner : A, exposed gateway ; B, rectangular tower. See p. 15

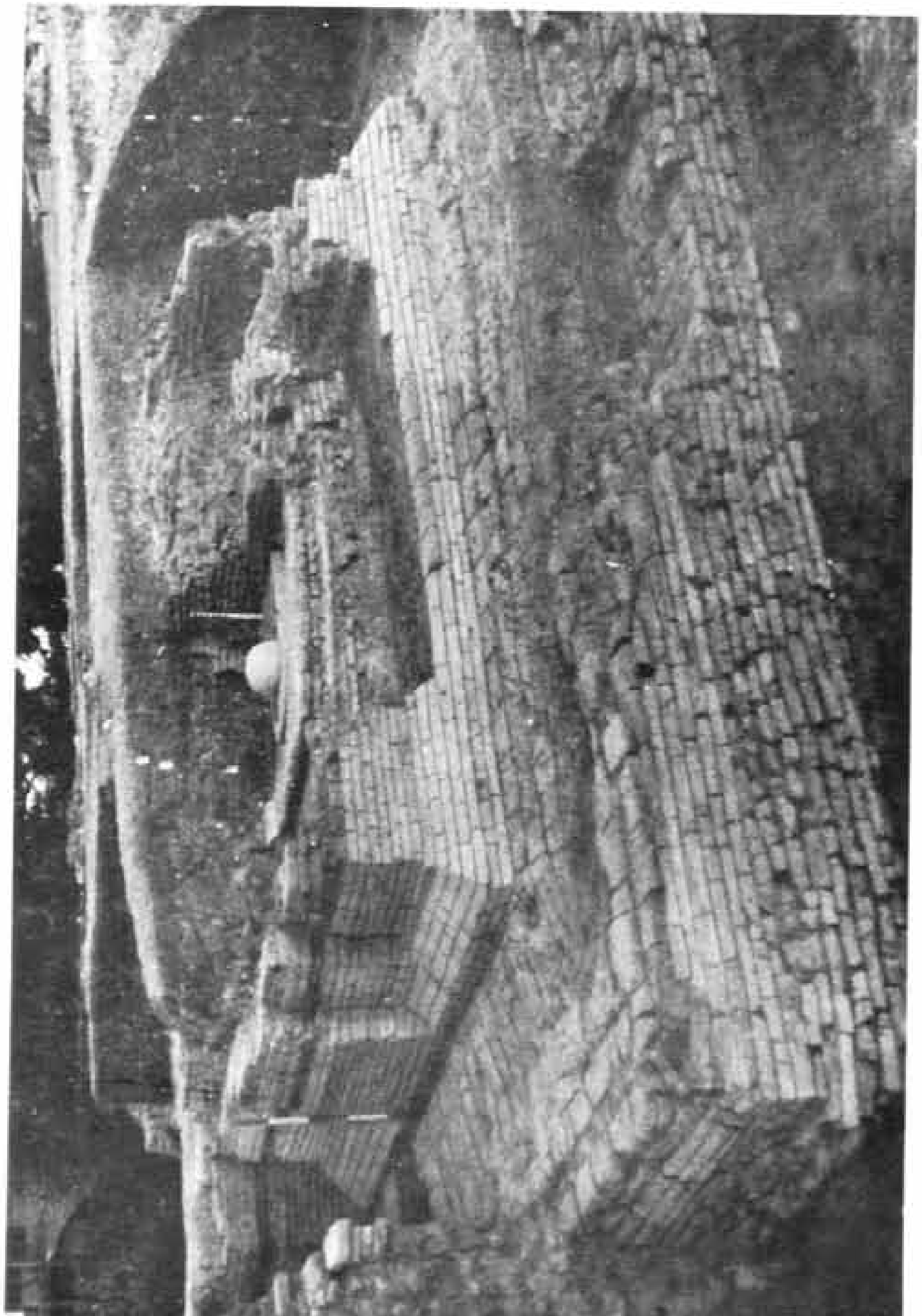


A

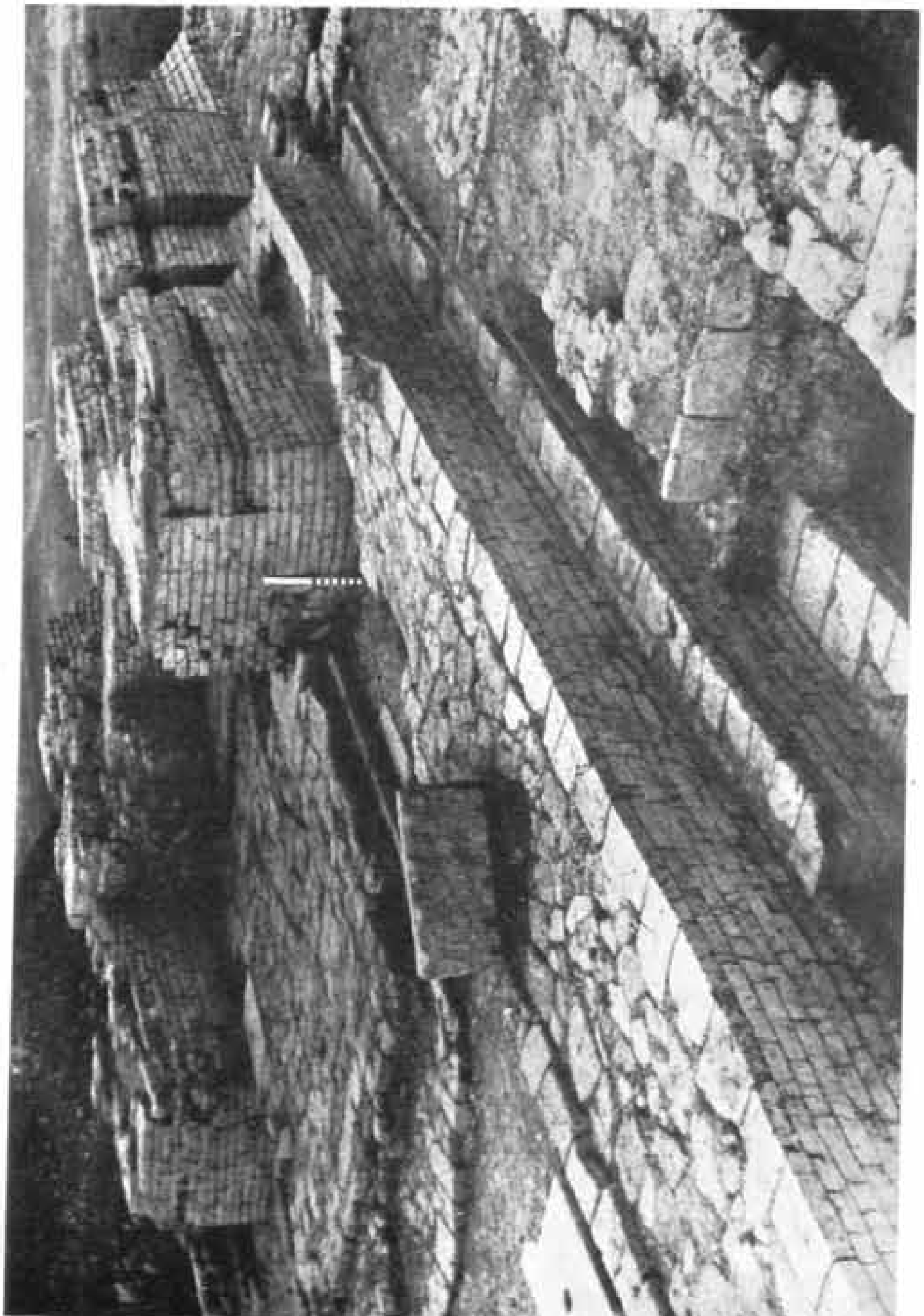


B

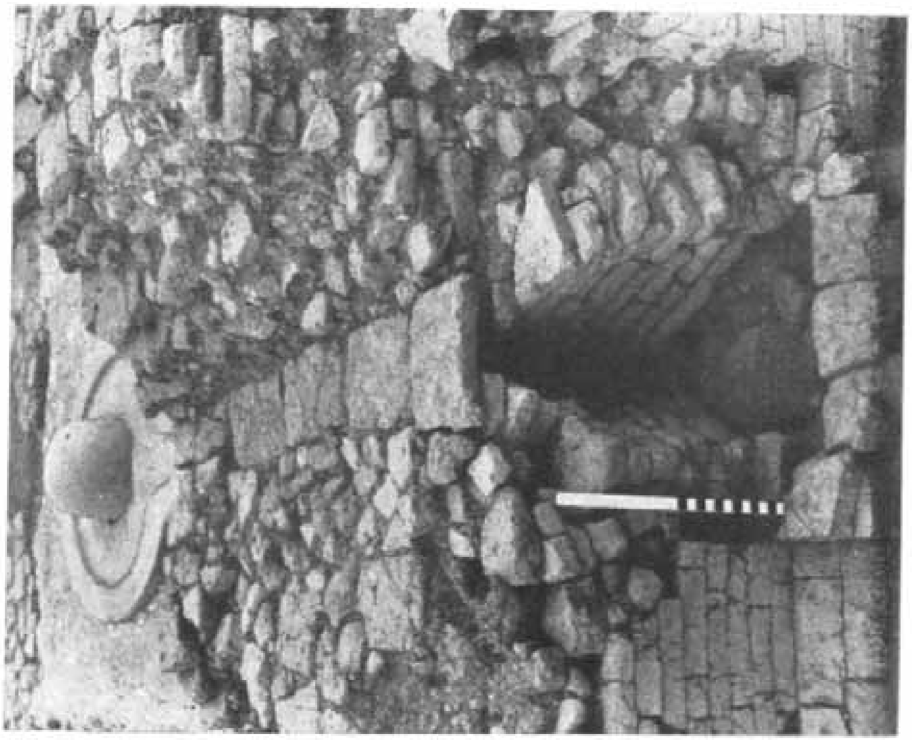
Karvan : A, *exposed northern wall and flooring with drain and soakage pit of Temple 1*; B, *a view showing details of offsets and corners of Temple 3*. *See p. 15*



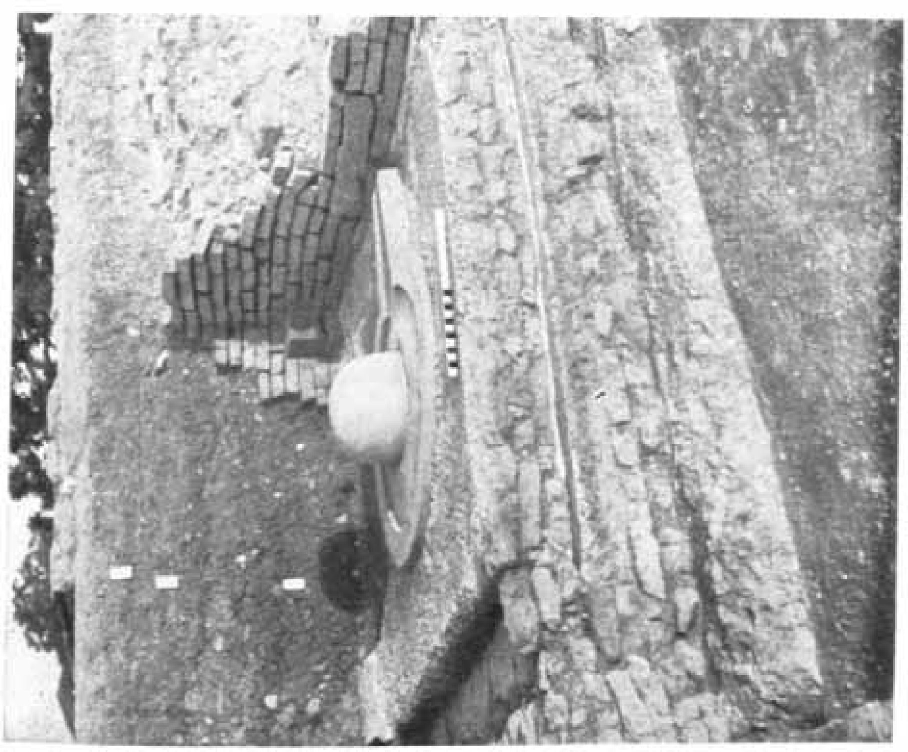
Karvan : view showing jagatī, linga and offsets and corners of southern wall of Temple 3. *See p. 15*



Kausam : general view of Temple 3. See p. 15



B

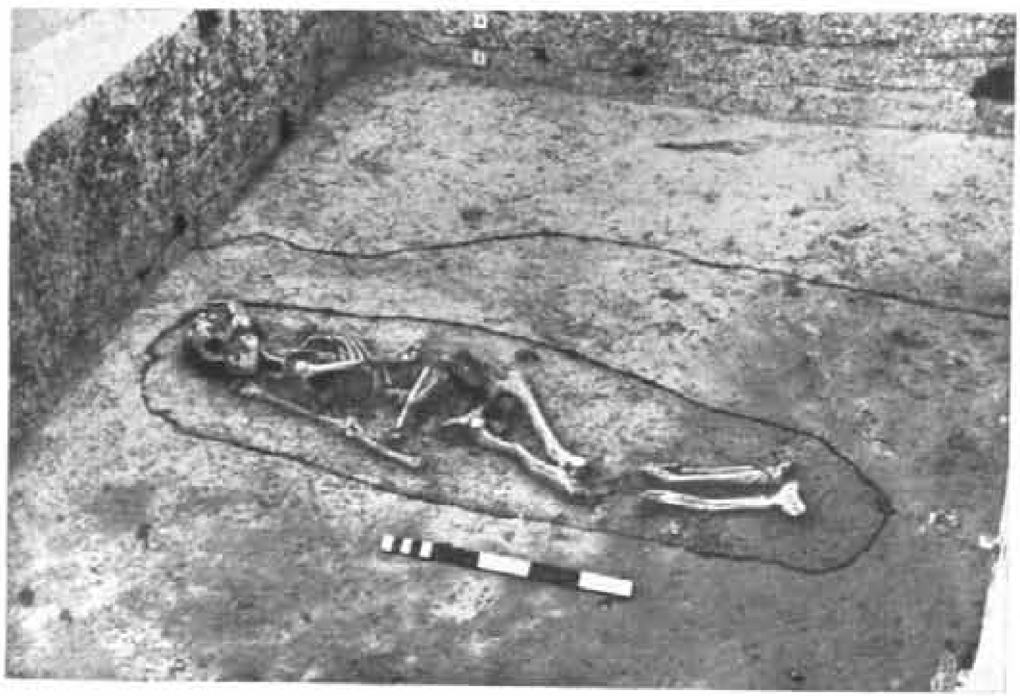


A

Karvan : A, *linga with yoni-patta set up on three successive floors*; B, *linga with covered drain and pranala, Temple 3.*
See p. 15.

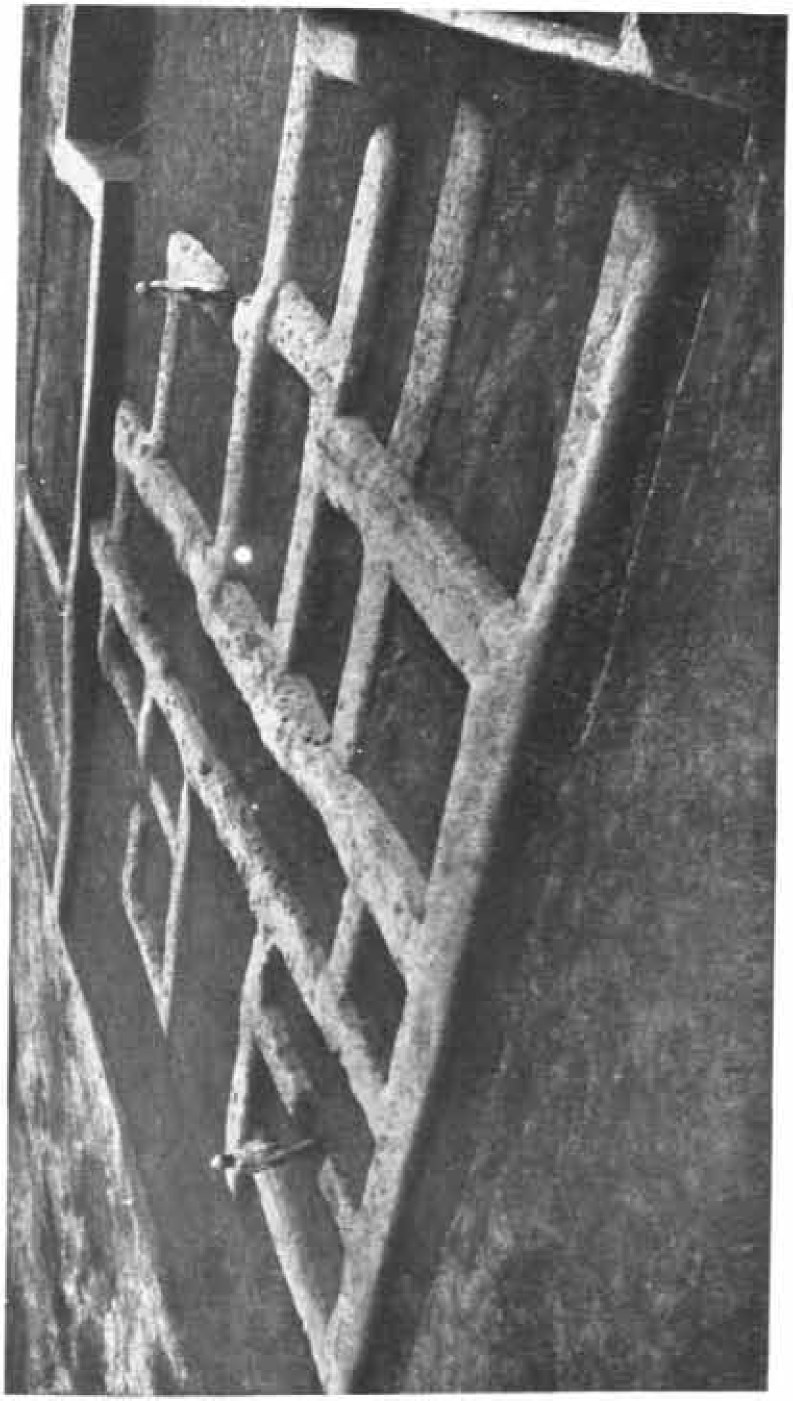


A

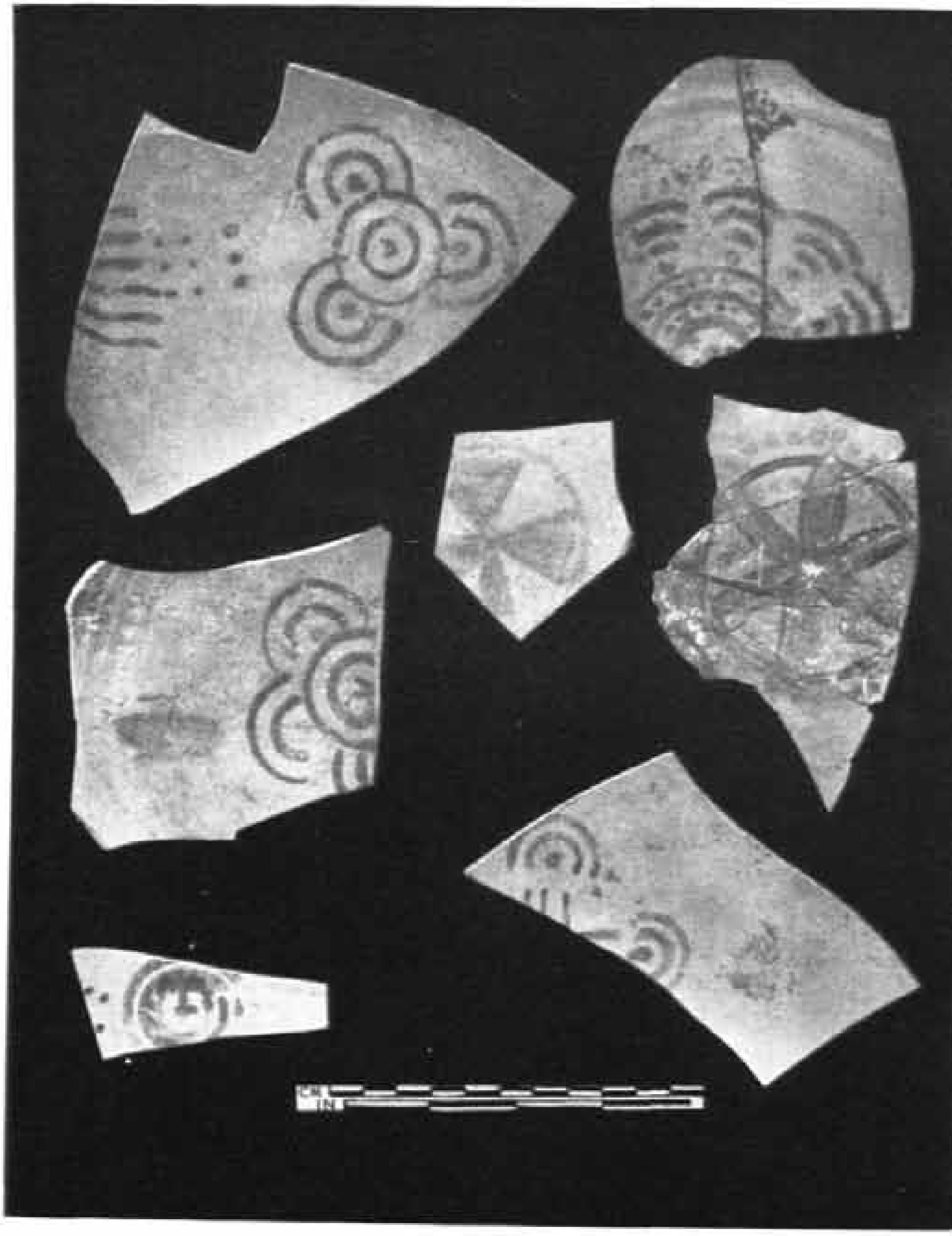


B

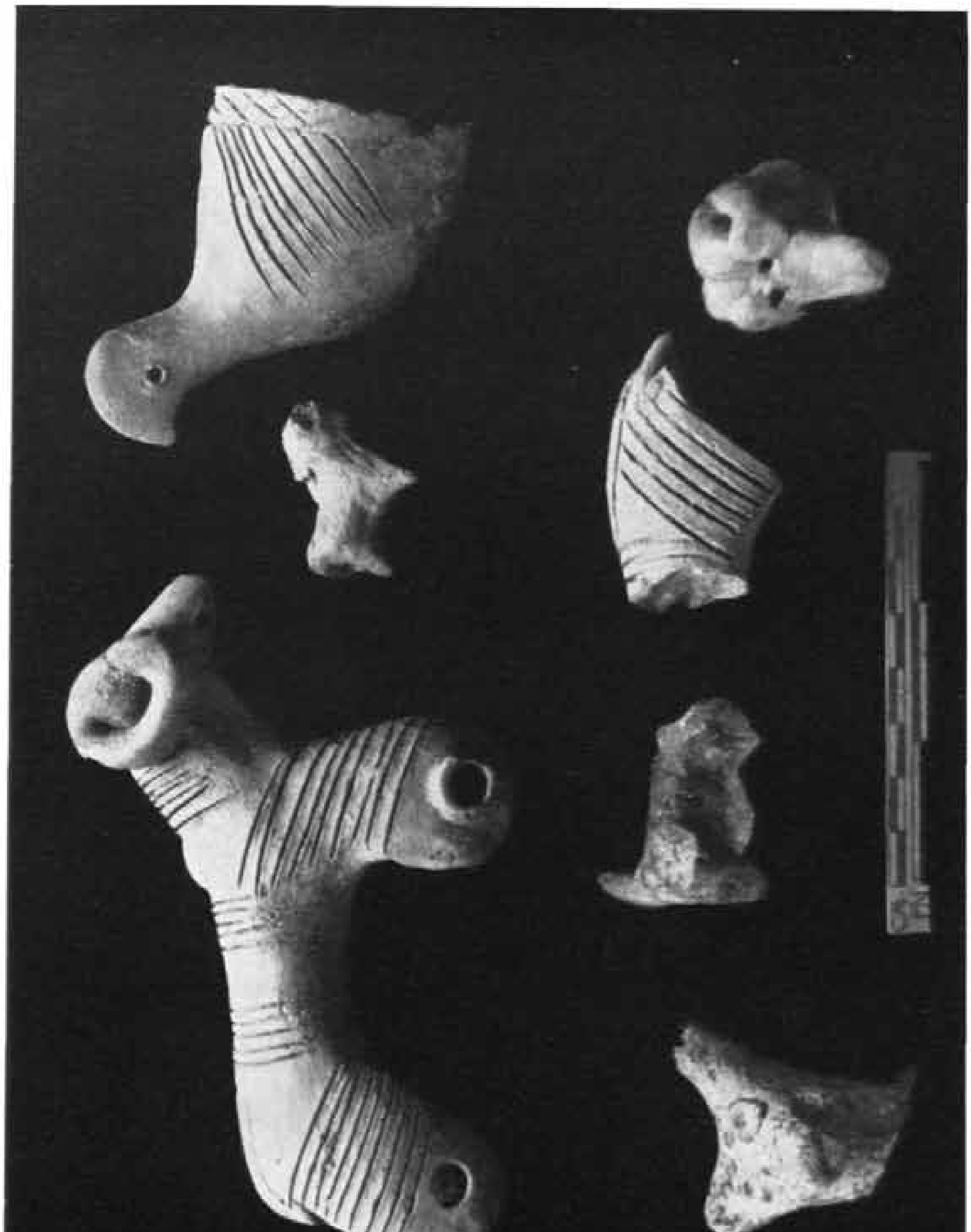
Bhagwanpura : A. *exposed oval structure, Period I B*; B. *grave-pit with skeleton, Period I B*. *See p. 17*



Bhagwanpura : view of a house-complex of mud-walls, Period IB. *See p. 17*



Bhagwanpura : Painted Grey Ware, Period IB. *See p. 17*



Bhagwanpura : terracotta animal figurines, Period IB. *See p. 17*

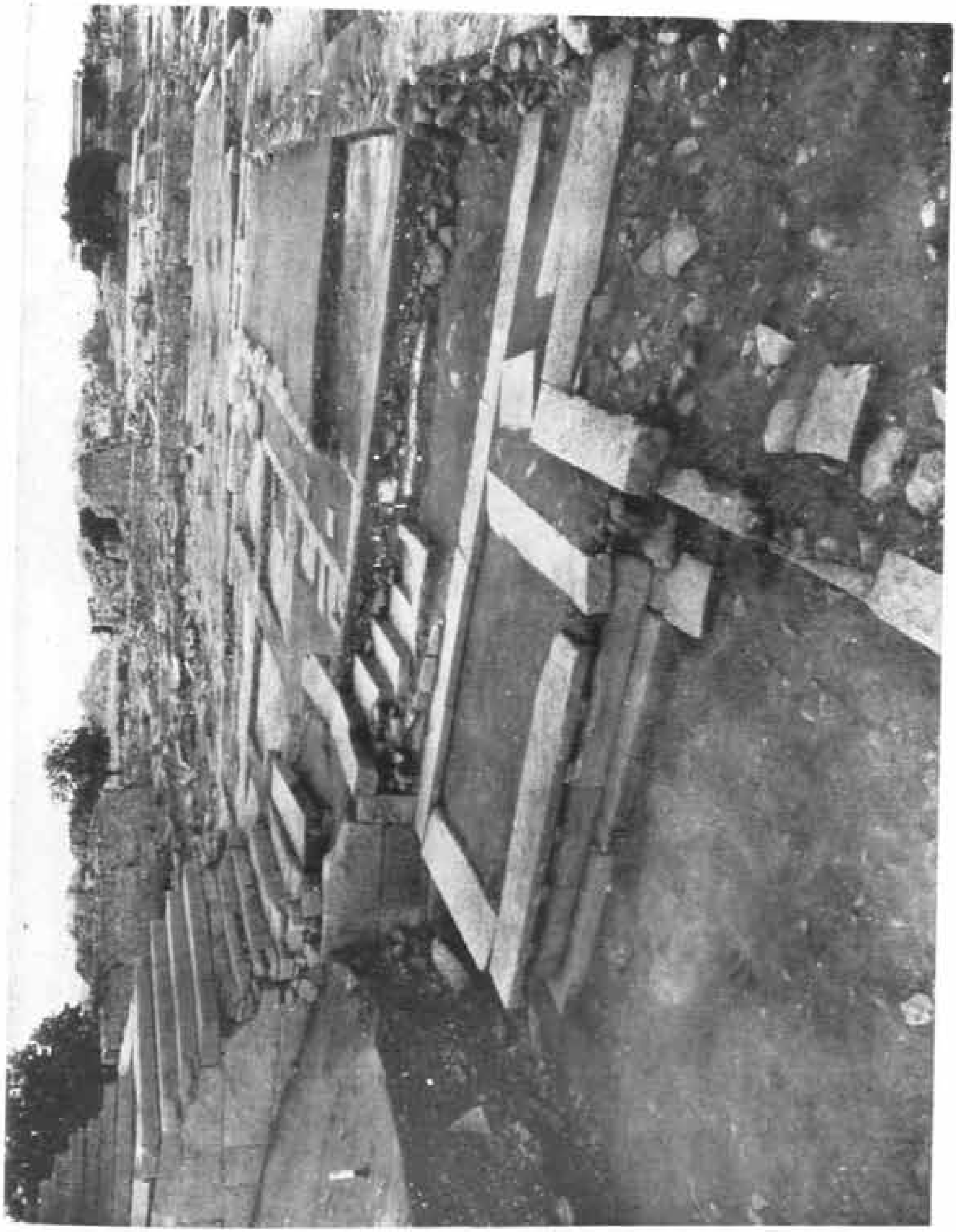


A

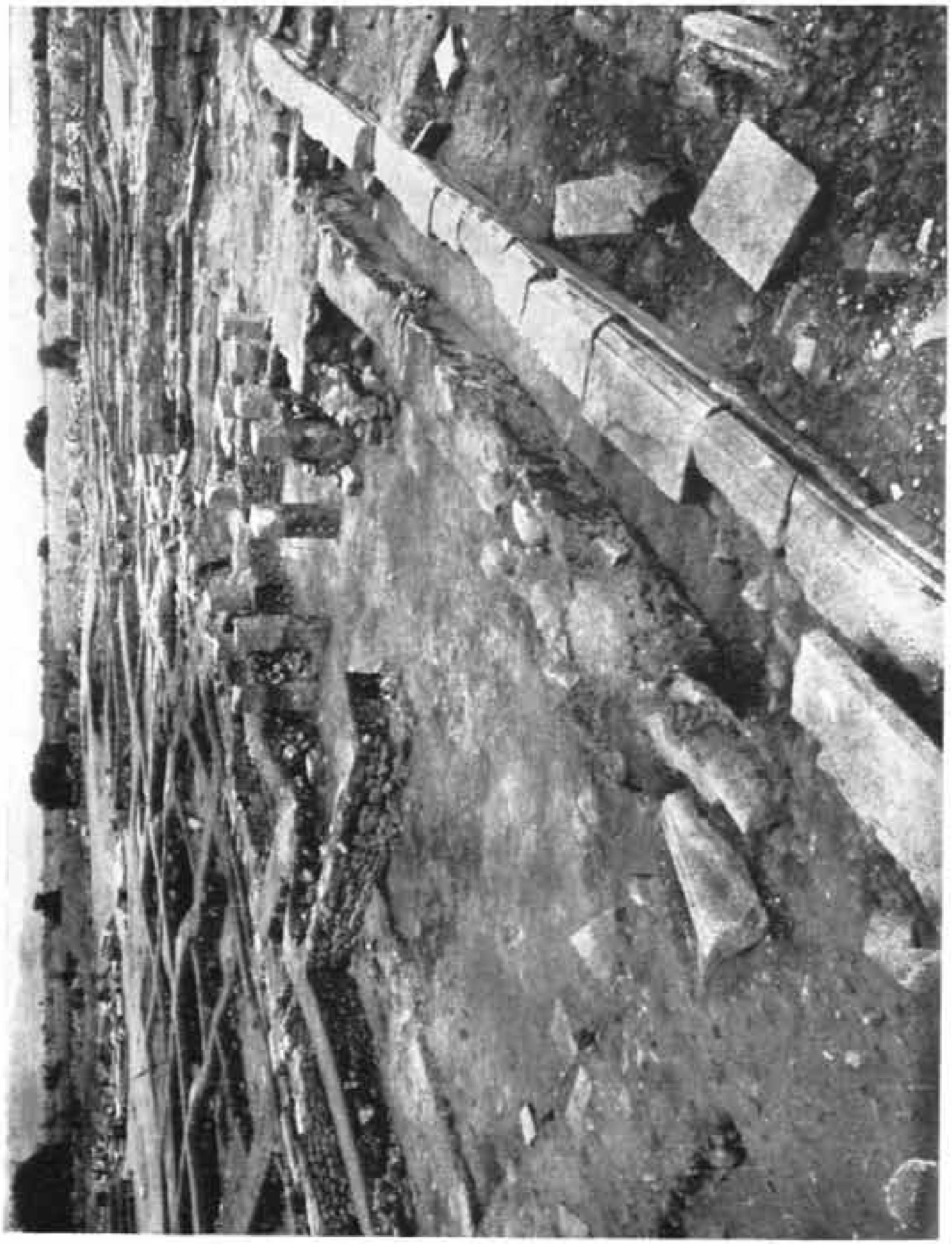


B

Hampi : A, *general view of the excavation*; B, *rectangular structure with a cistern.* *See p.* 20



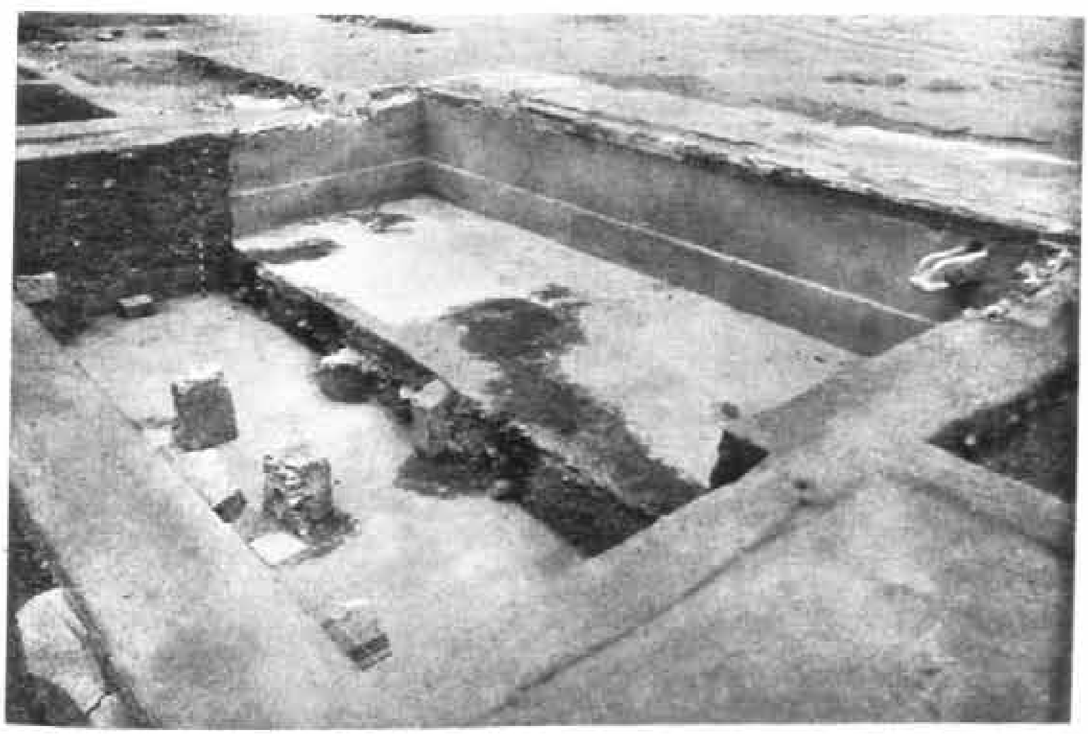
Hampi: exposed basement of a structure with steps leading to King's Audience Hall. *See p. 29*



Hampi : exposed pavilion with twelve monolithic pillars. *See p. 20*



A



B

Hampi : A, *exposed cistern of well-dressed stone masonry* ; B, *a huge tank in front of Mahanavami Dibba*, *See p. 20*

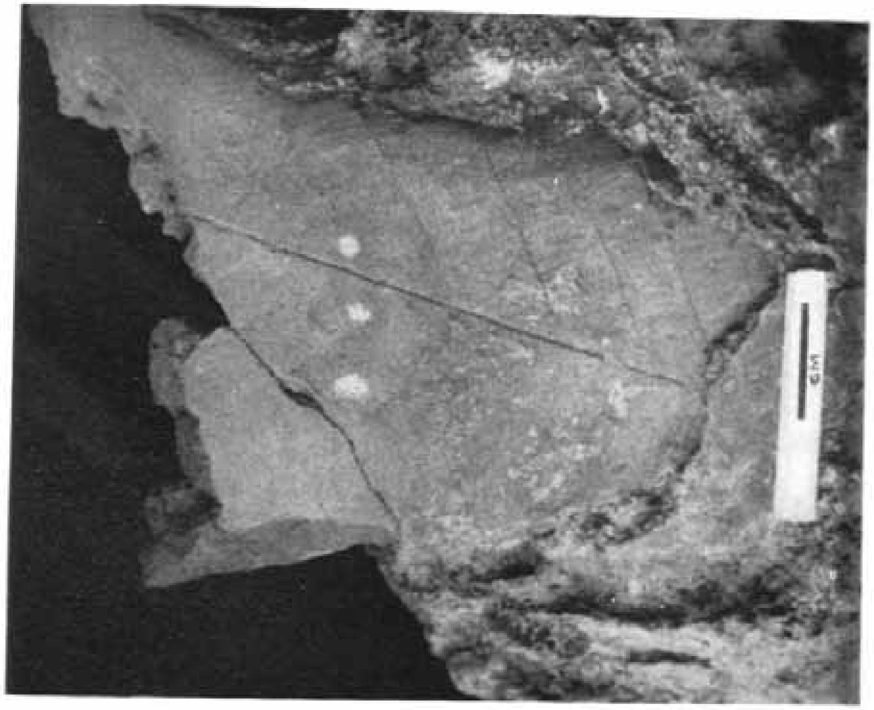


A



B

Hampi : A, *view showing two constructional phases of Mahanavami Dibba*; B, *a panel depicting hand-cuffed persons along with a horse led by a dwarf.* *See* p. *20*



B



A

Hunsgi : dicotyledonous and monocotyledonous leaf-impressions. *See p. 21*

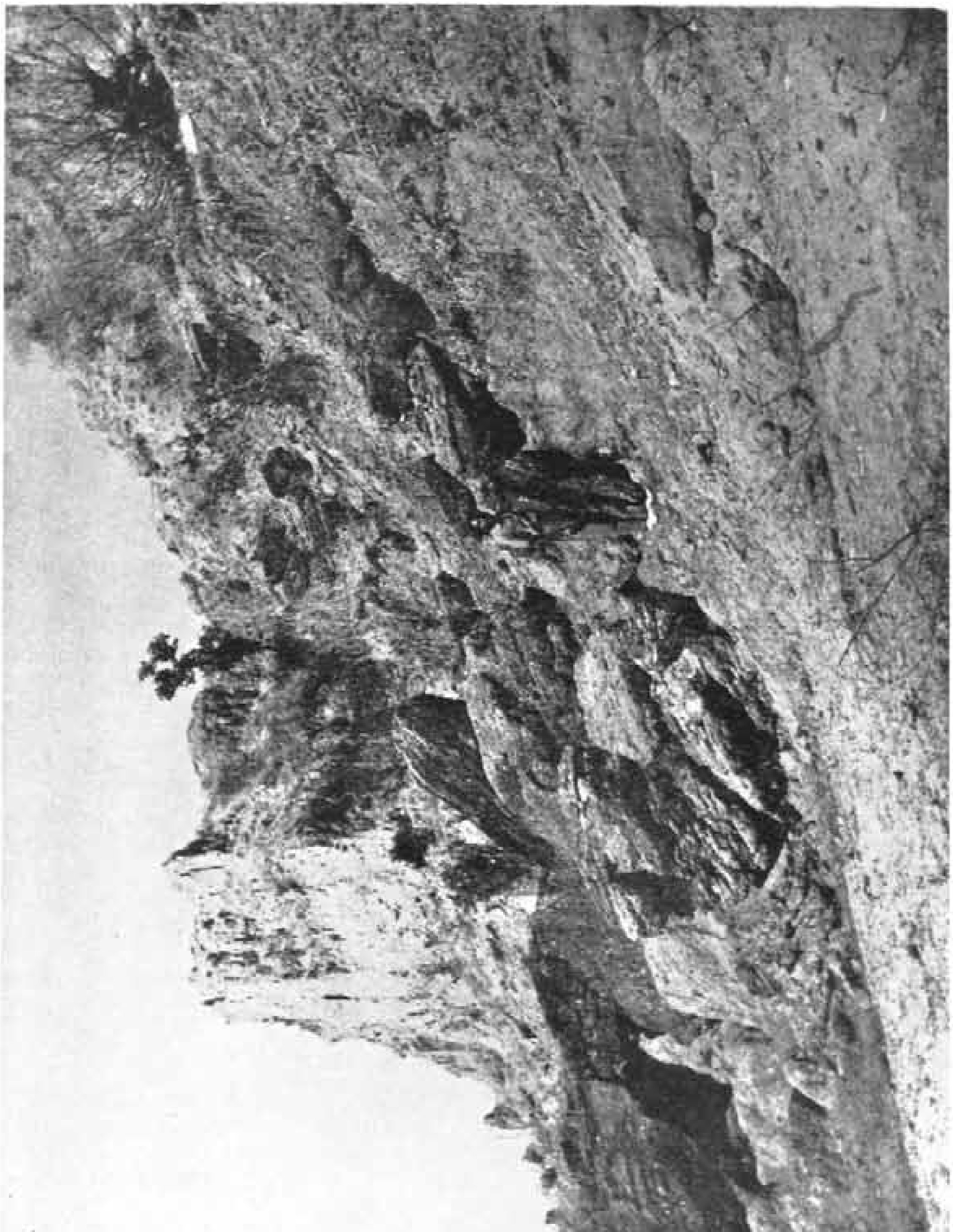


A

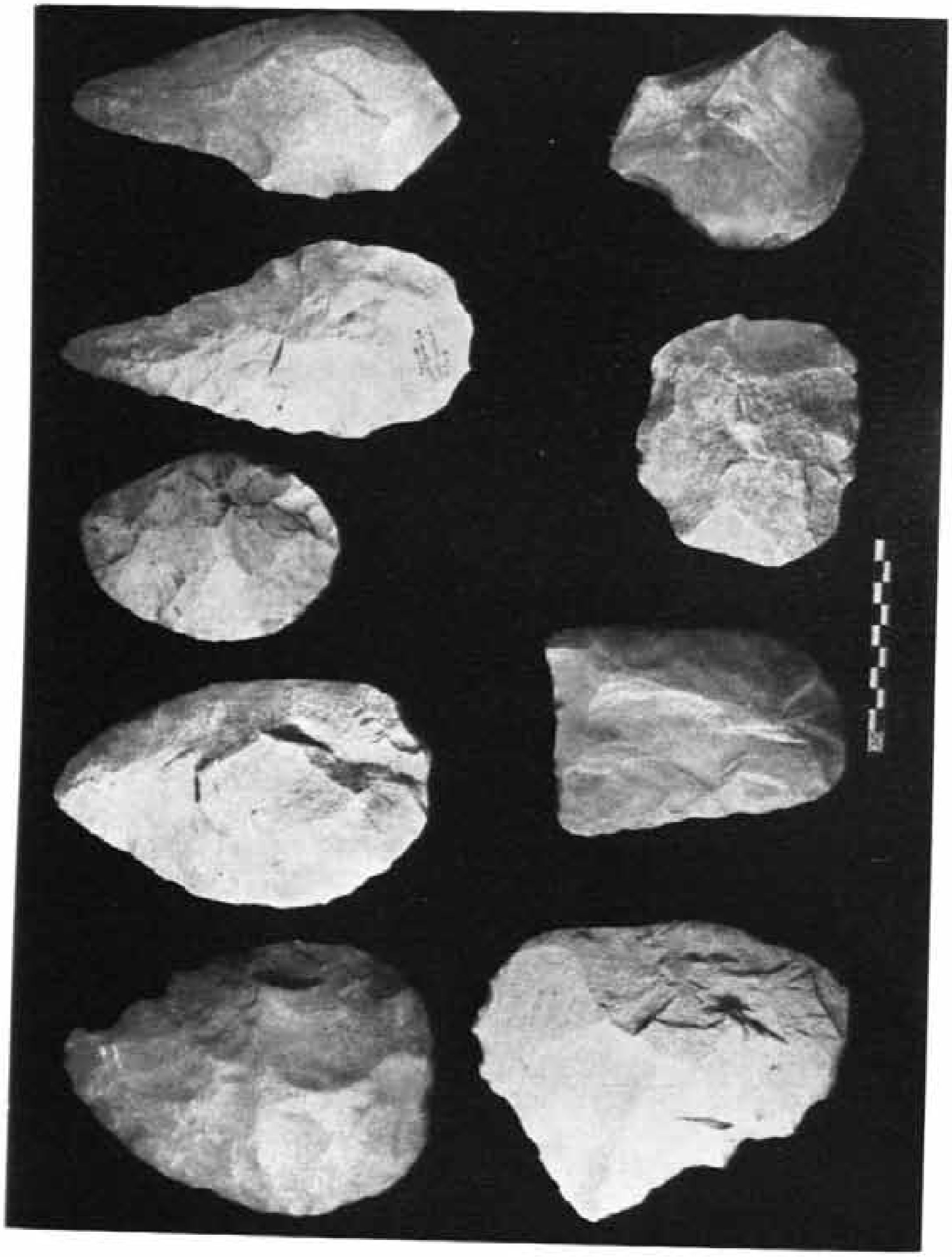


B

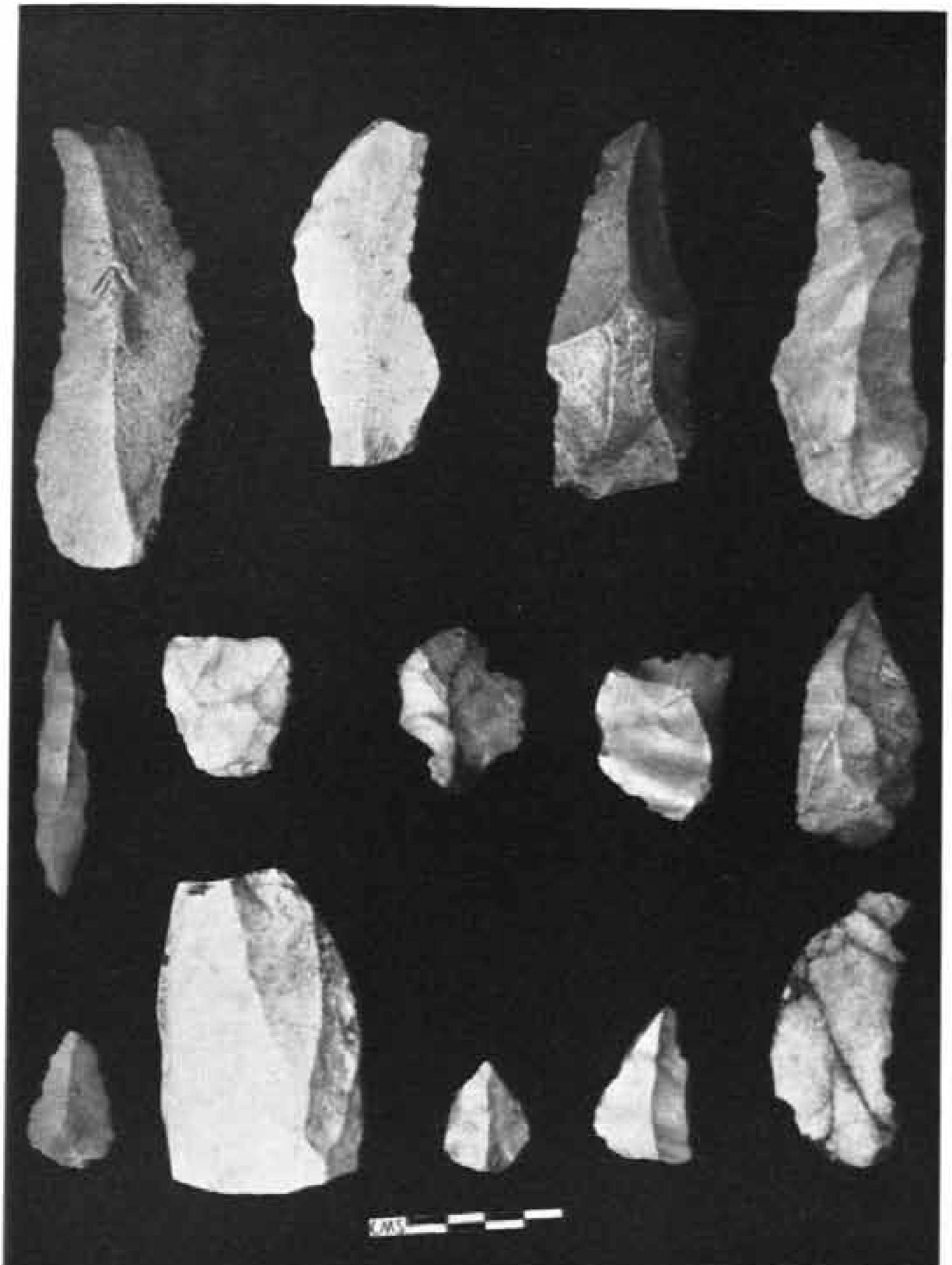
Bhimbetka : A, *exposed Acheulian floor*; B, *exposed burial, Mesolithic period.* *See p. 24*



Nakjhar Khurd : section of the river Son. *See p.* 25



Son valley : Lower Palaeolithic tools. *See p. 25*



Son valley : Upper Palaeolithic tools. See p. 27



A

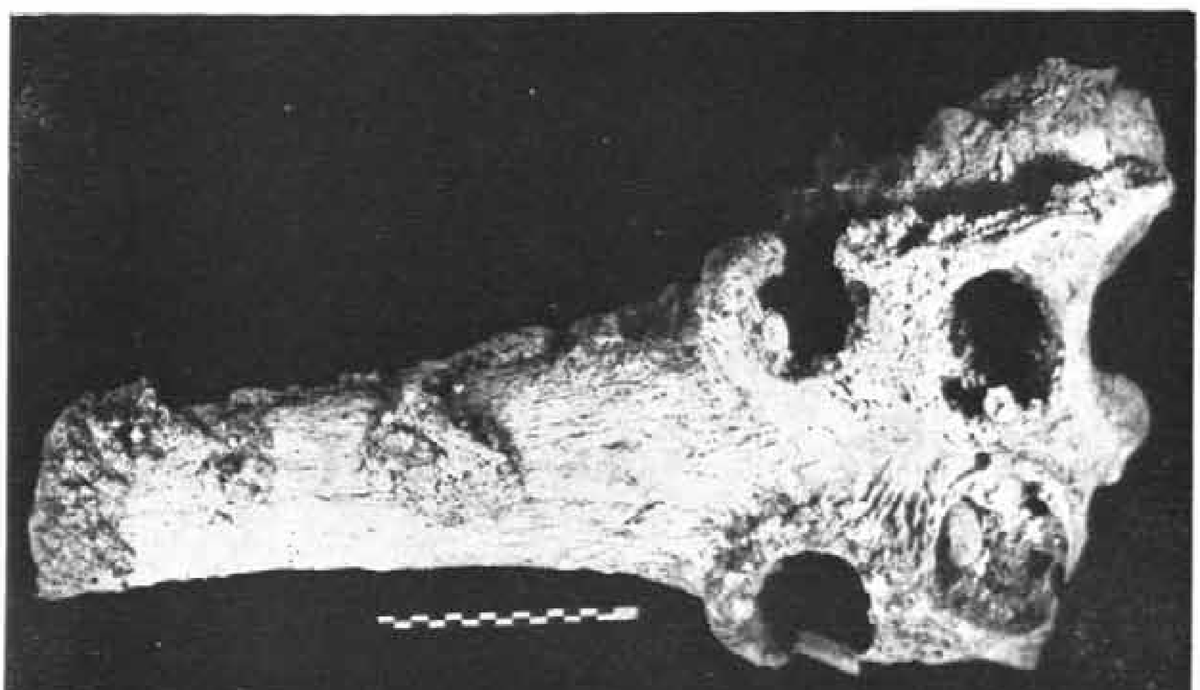


B

Son valley : A, *lower jaw of hippopotamus* ; B, *jaw of Elephas*. *See p. 27*

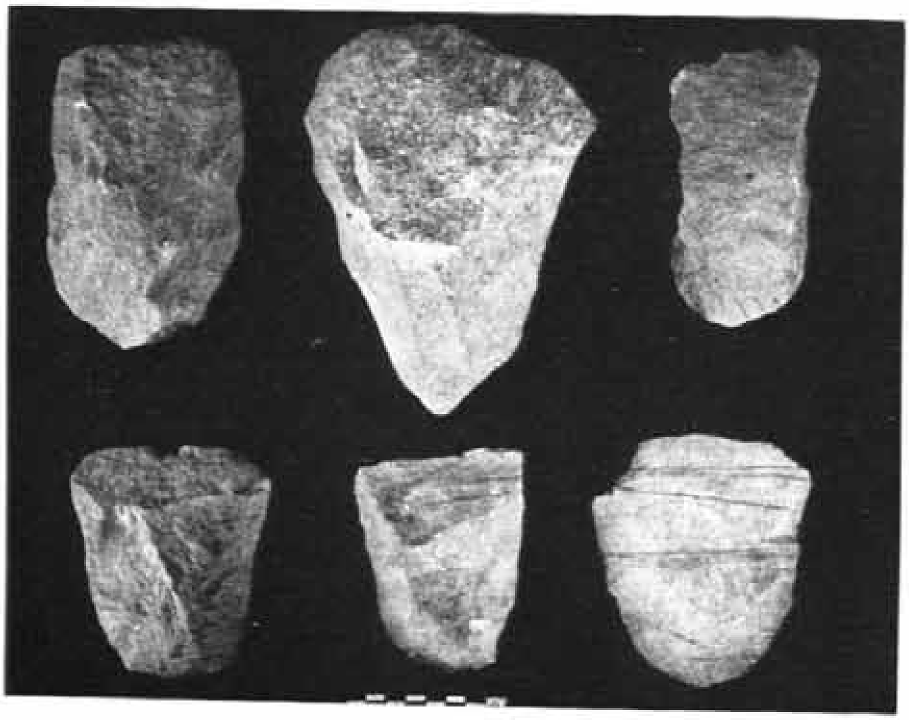


A

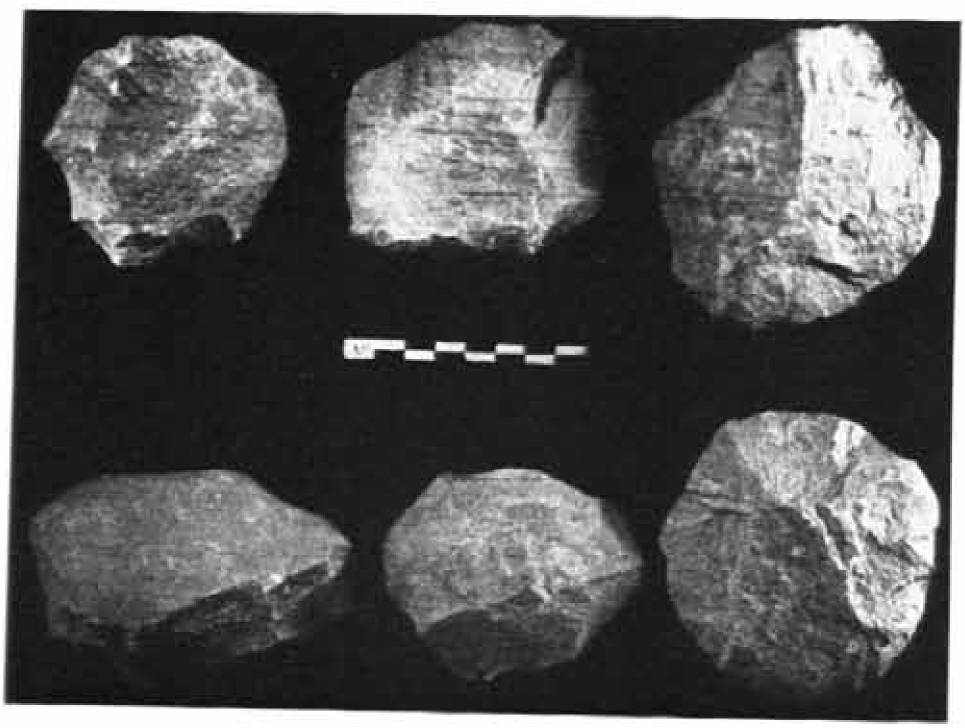


B

Son valley ; A, *jaw of Equus* ; B, *upper jaw of Gavialis.* *See p. 27*

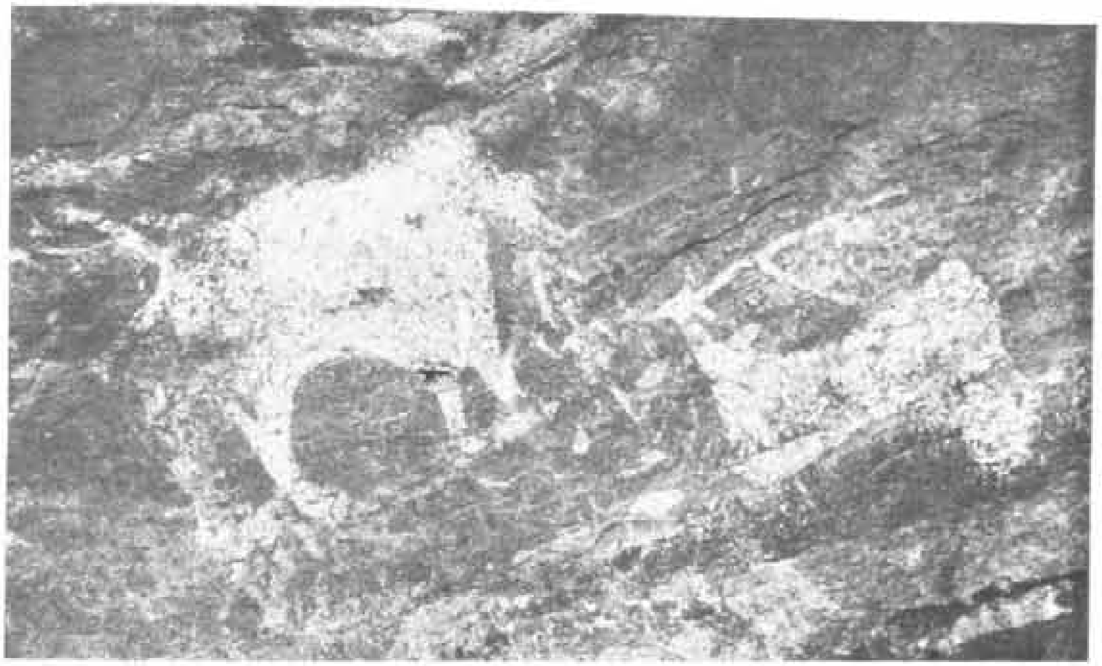


A



B

Maihar : A, *cleavers*; B, *scrapers*. *See p. 27*



A

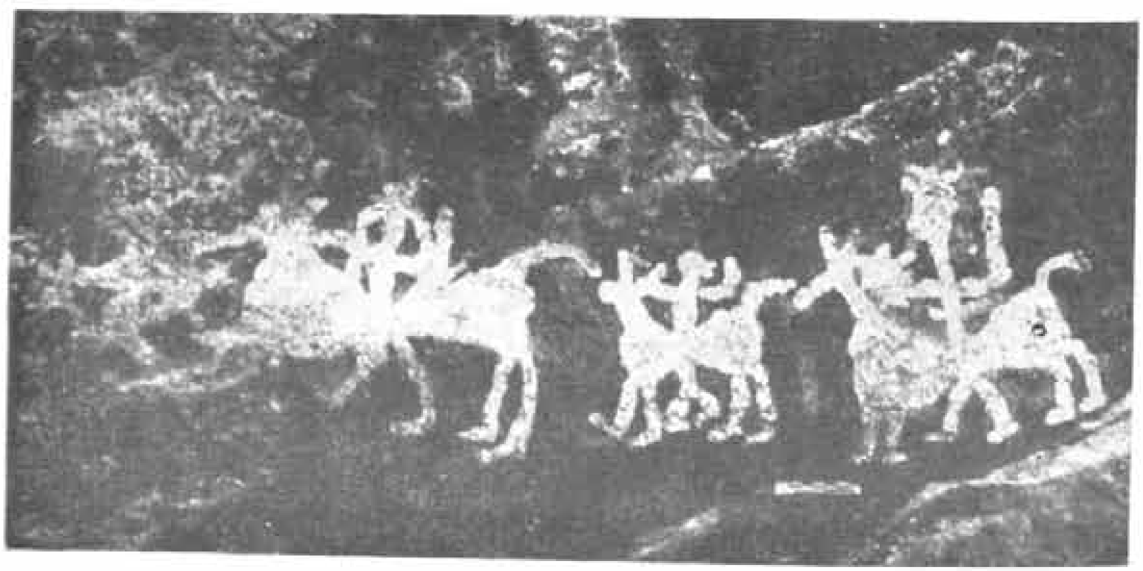


B

Paintings in rock-shelters at, A, Joshipur and B, Unchakhera. *See p. 29*

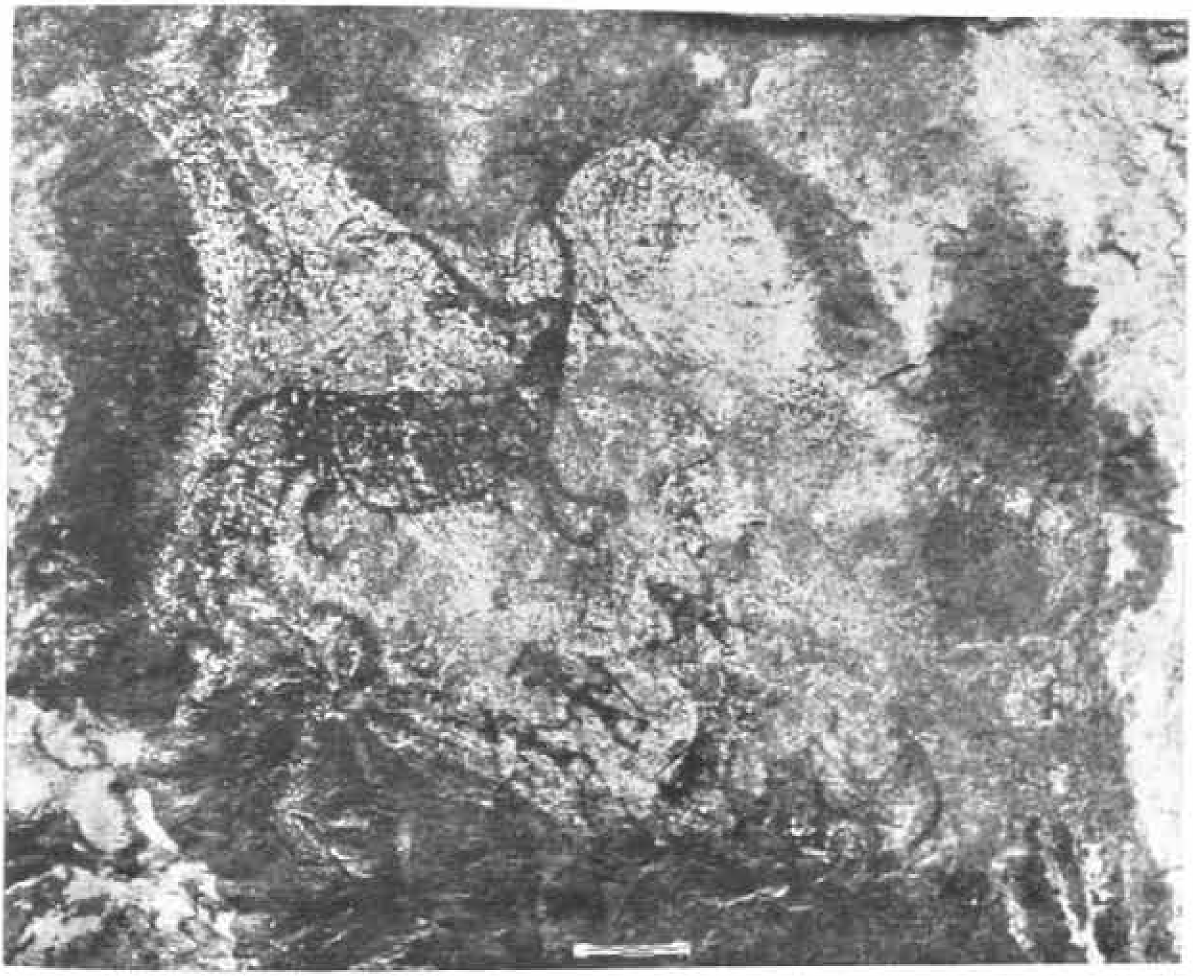


A



B

Bayan : paintings in rock-shelters. *See p. 29*



A



B

Pangoraria : A, *rock-painting of animals showing superimposition over an earlier painted surface* ; B, *rock-painting of dancing human figures.* *See p.* 29

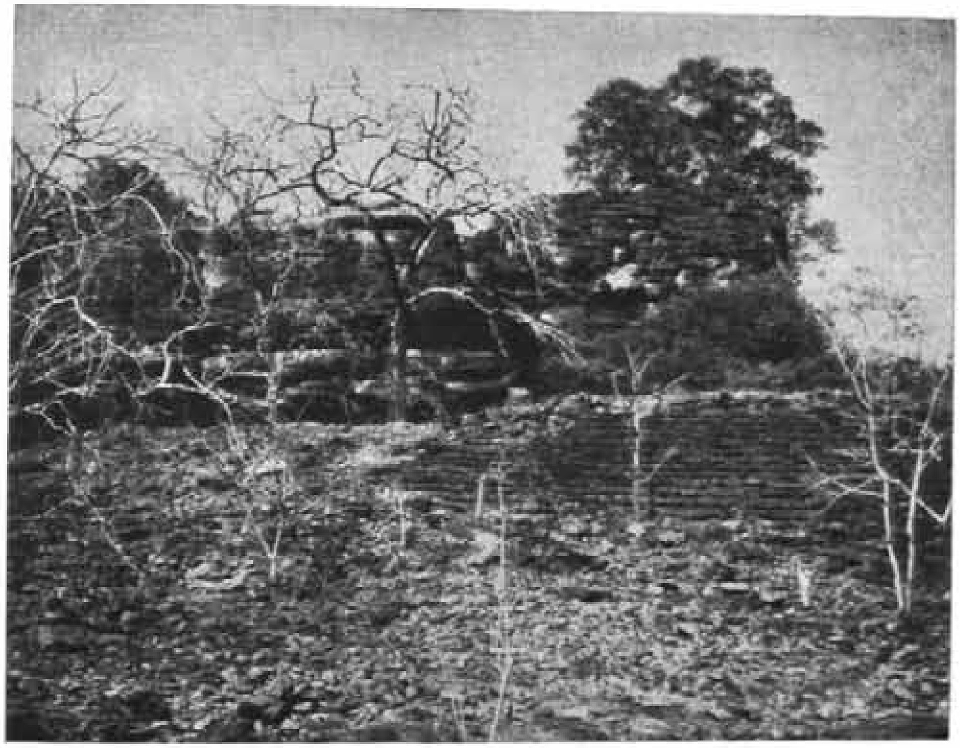


A



B

Pangoraria : *rock-paintings showing horse-riders.* *See p. 29*



A



B

Saru-Maru-ki-Kothadi : A, *general view of rubble-rivetment in front of cave*; B, *rubble stupa on the hill-top.* *See p.* 29



A



B

Talpura : A, view of smaller stupa; B, [illegible]



A



B

Talpura : A, *view of ancient paved-pathway leading to stupas* ; B, *inscription from the village.* *See p.* 30

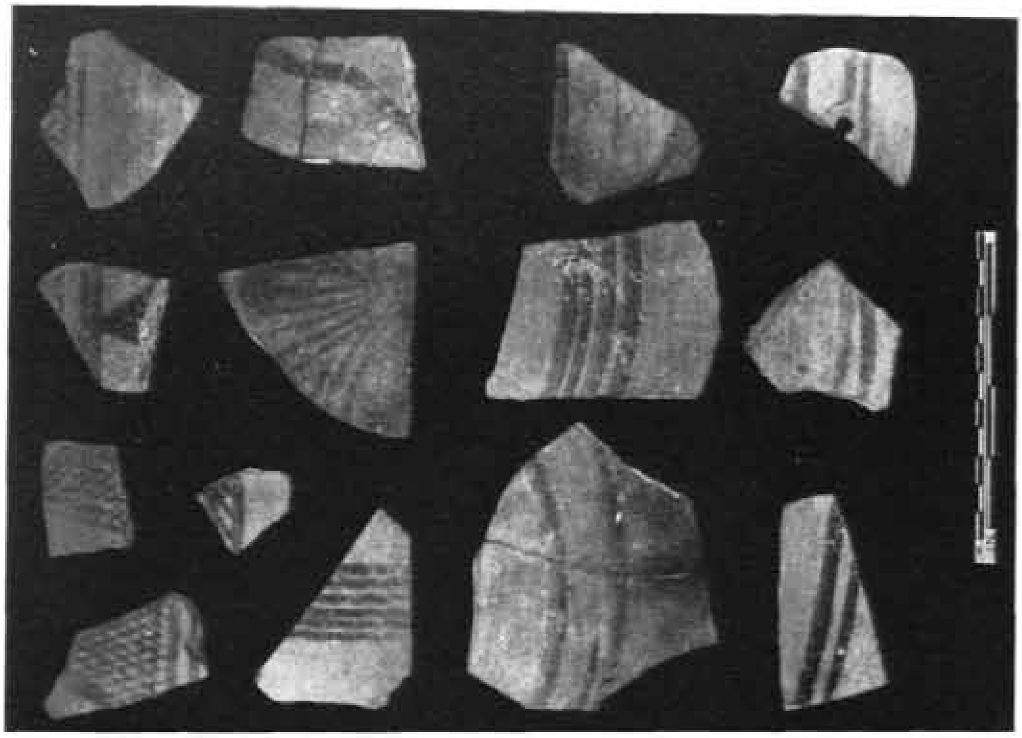


A

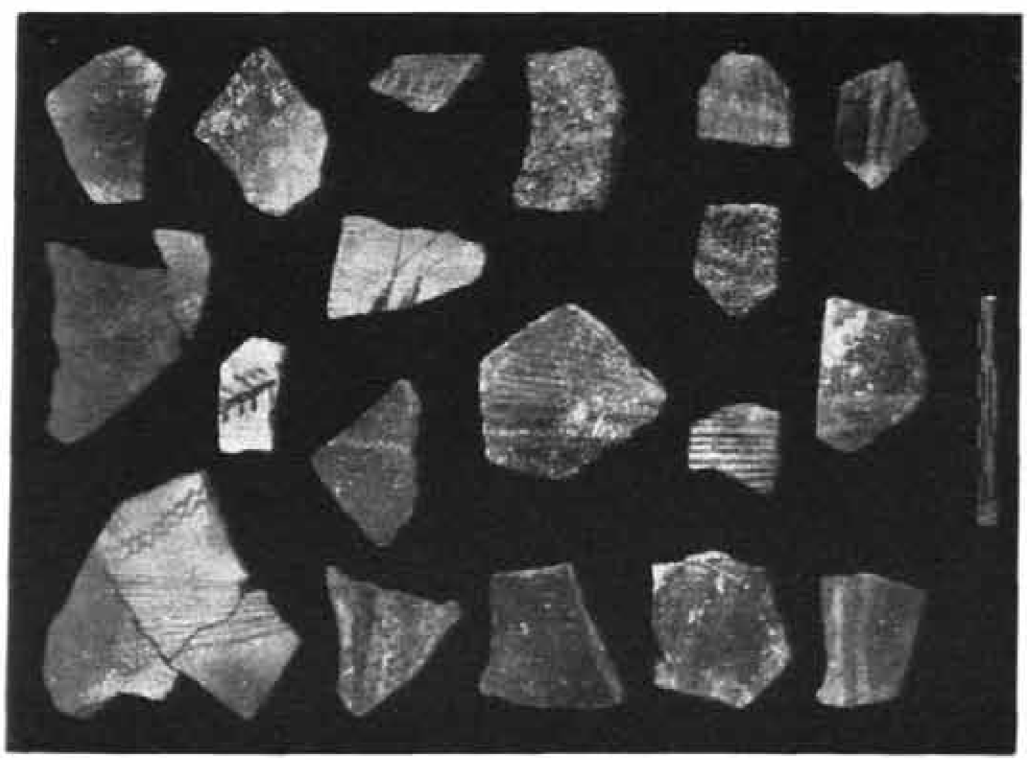


B

Besnagar : exposed structures of different phases. See p. 31

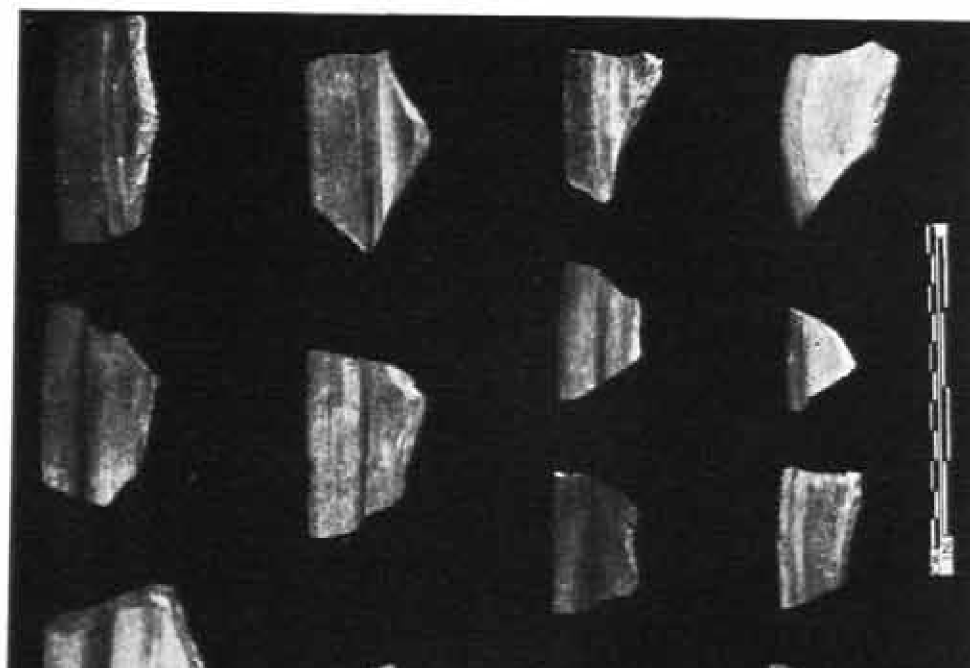


B

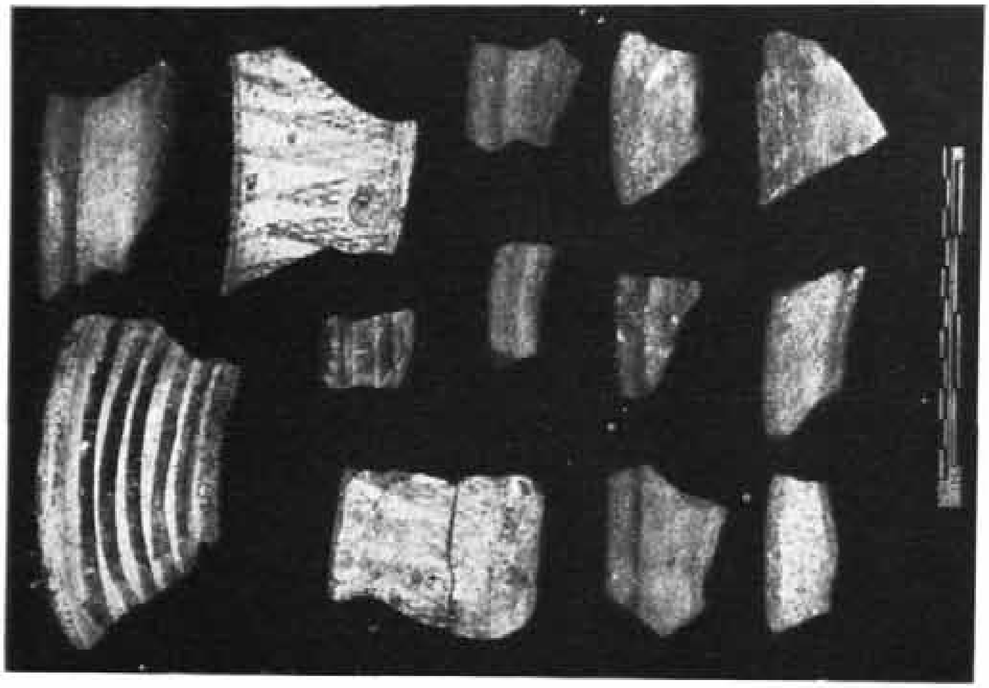


A

Daimabad : A, *painted pottery of Savalda ware, Phase I*; B, *Late Harappan pottery, Phase II*. *See p.* 32

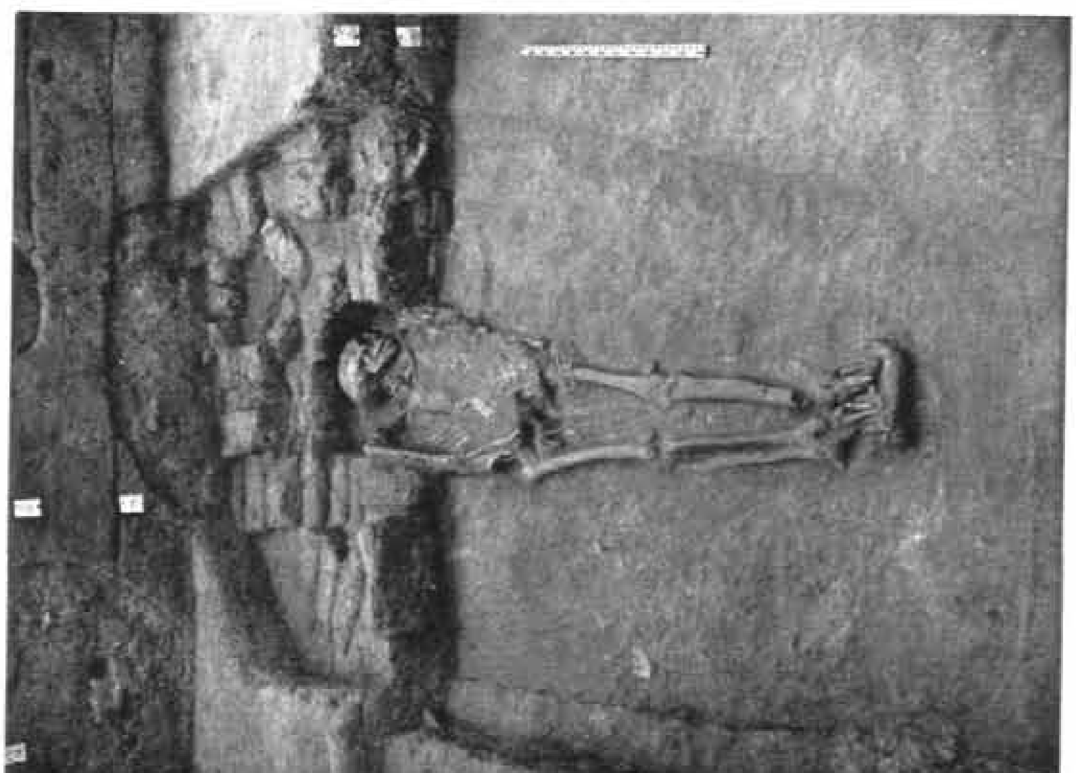


A



B

Daimabad : A, *Late Harappan pottery, Phase II*; B, *pottery of cream and buff ware, Phase III.* *See p.* 32



A

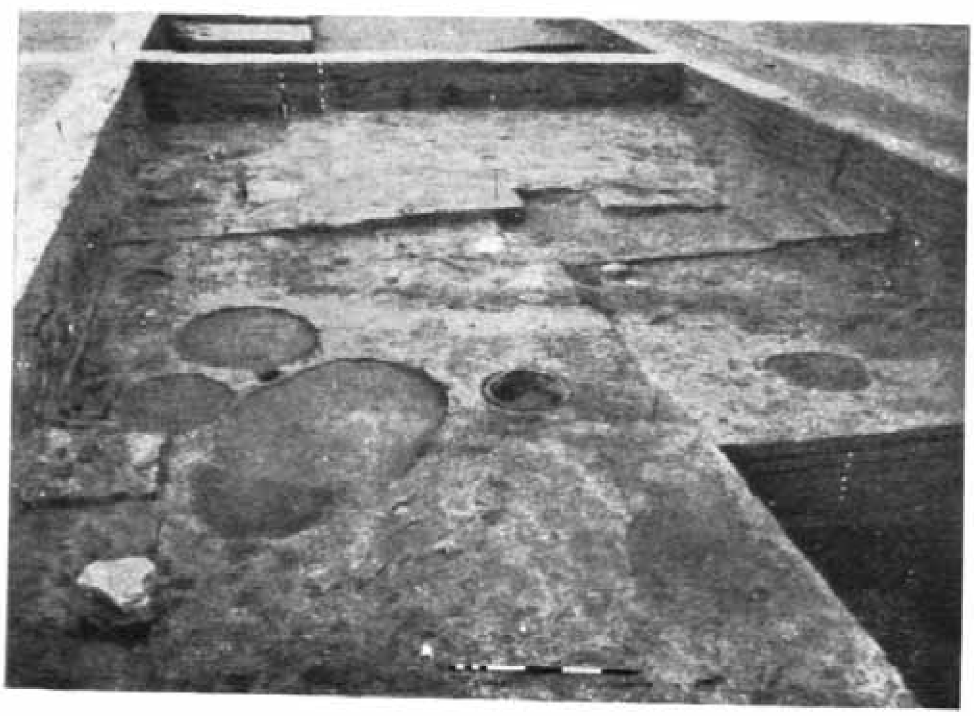


B

Daimabad : A, *burial of Phase II*; B, *burial of Phase V.* *See pp.* 32-33



A

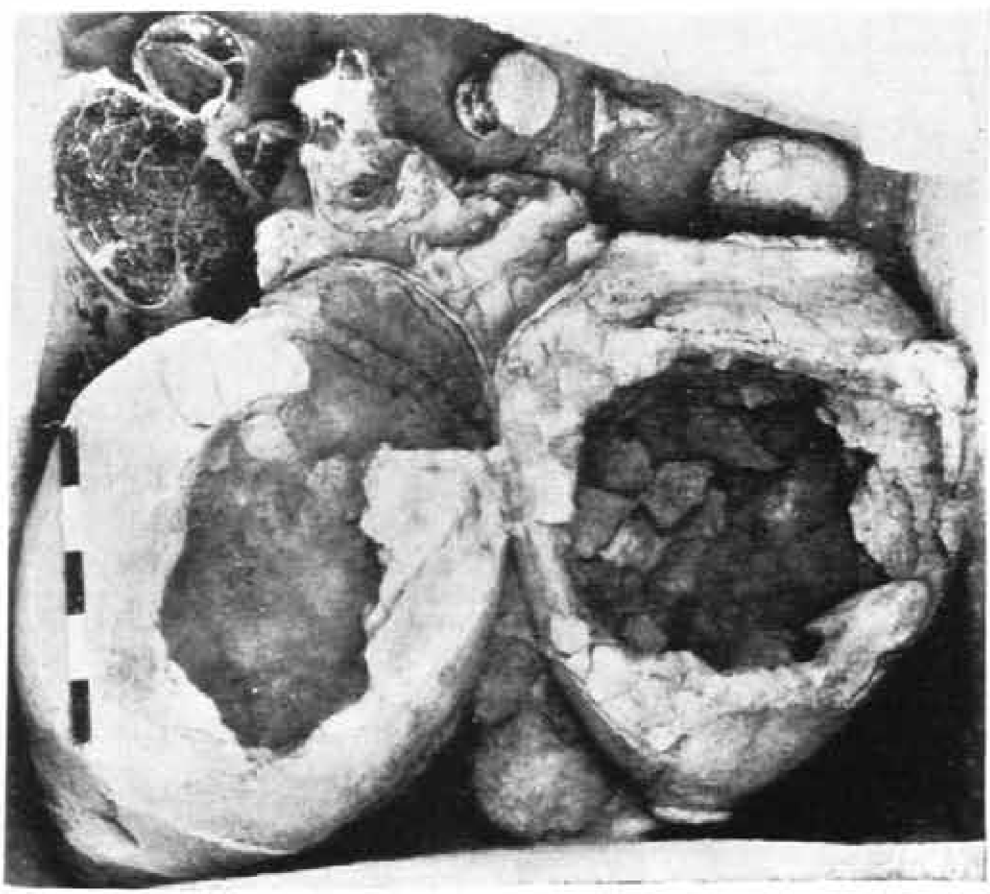


B

Daimabad : A, *view showing mud-strips, Phase V*; B, *house-complex of Phase* V. *See p. 33*



A

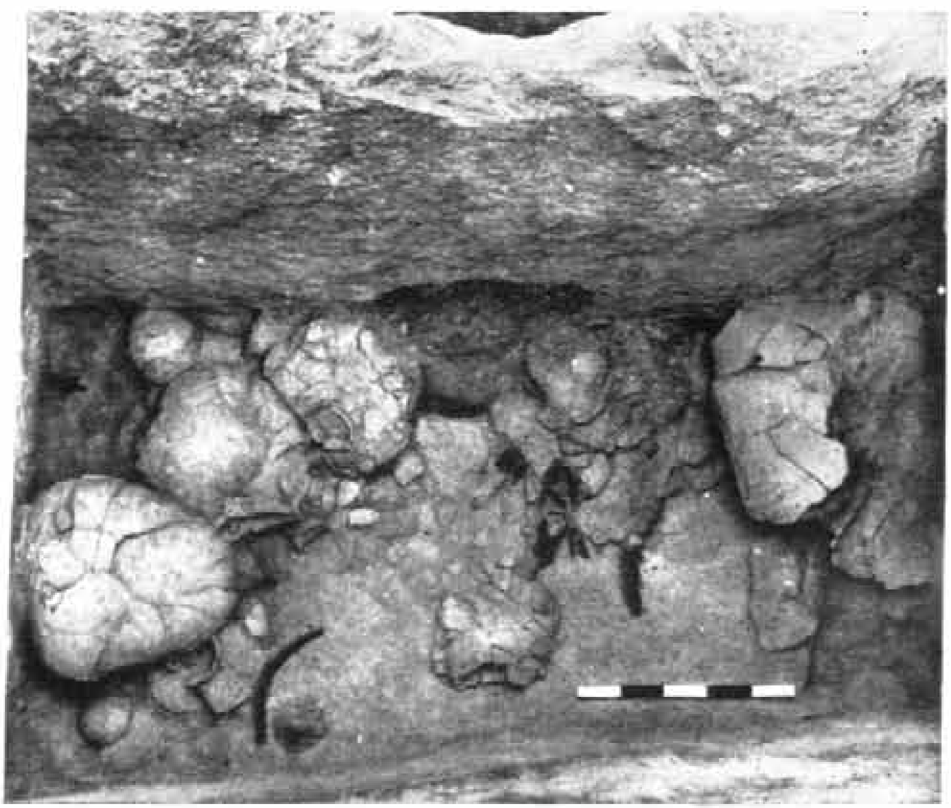


B

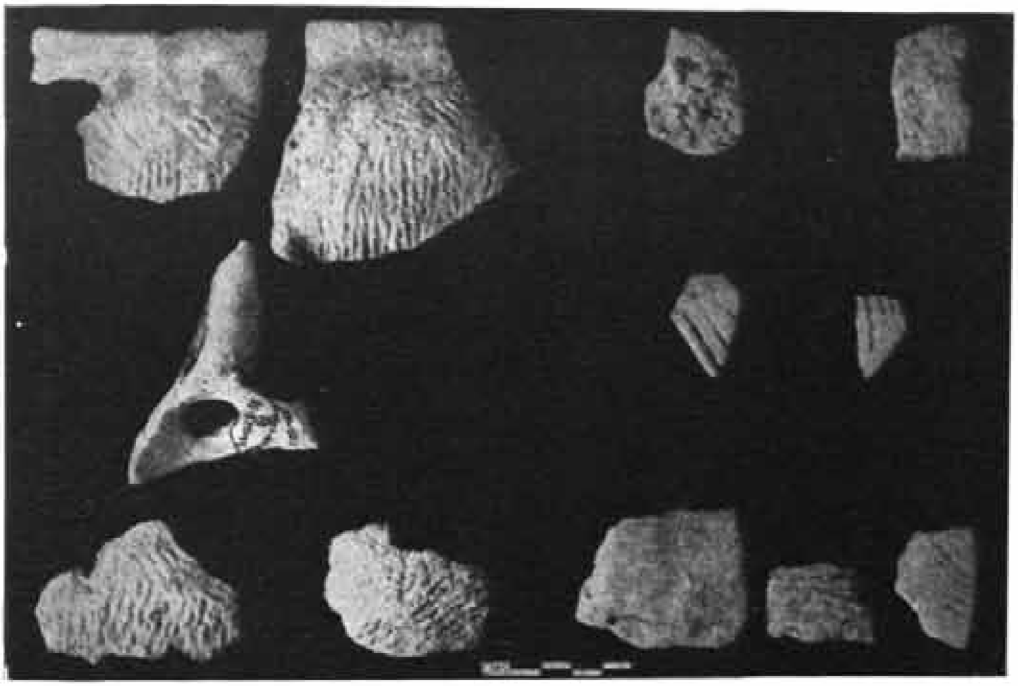
Sittannavasal : A, *view of exposed Megalith III*; B, *close view of urns interred.* *See pp. 40-41*



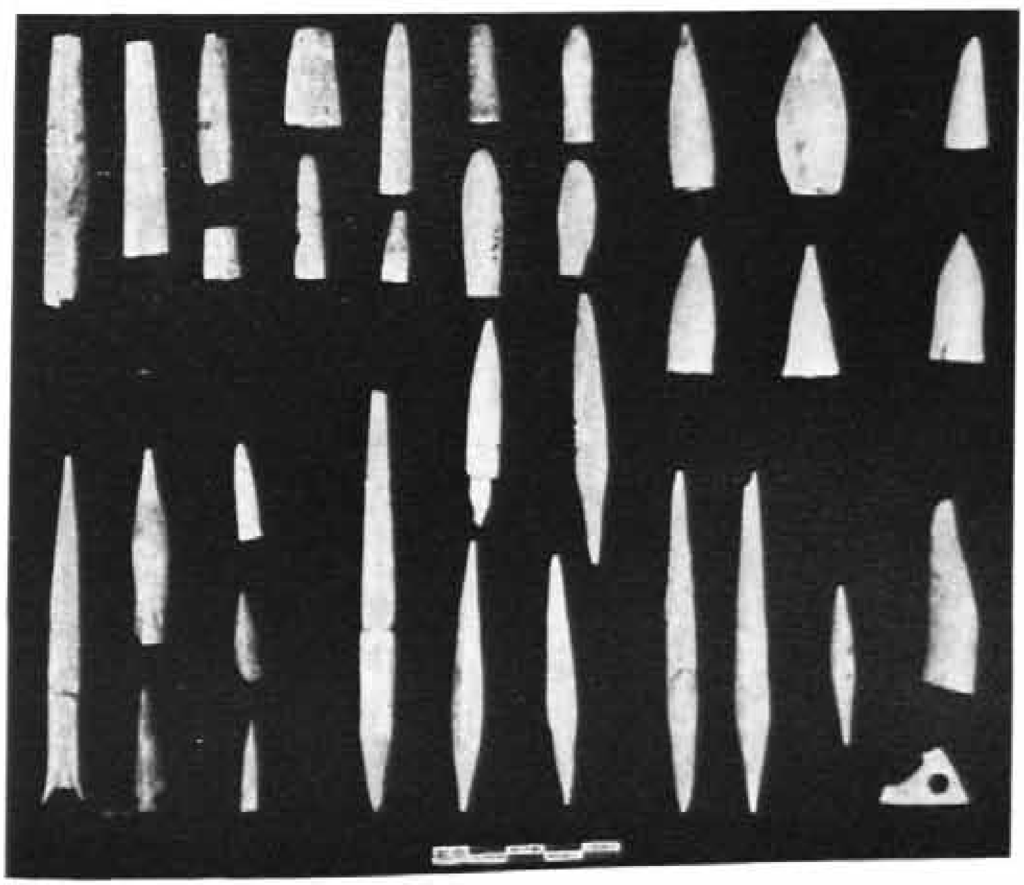
A



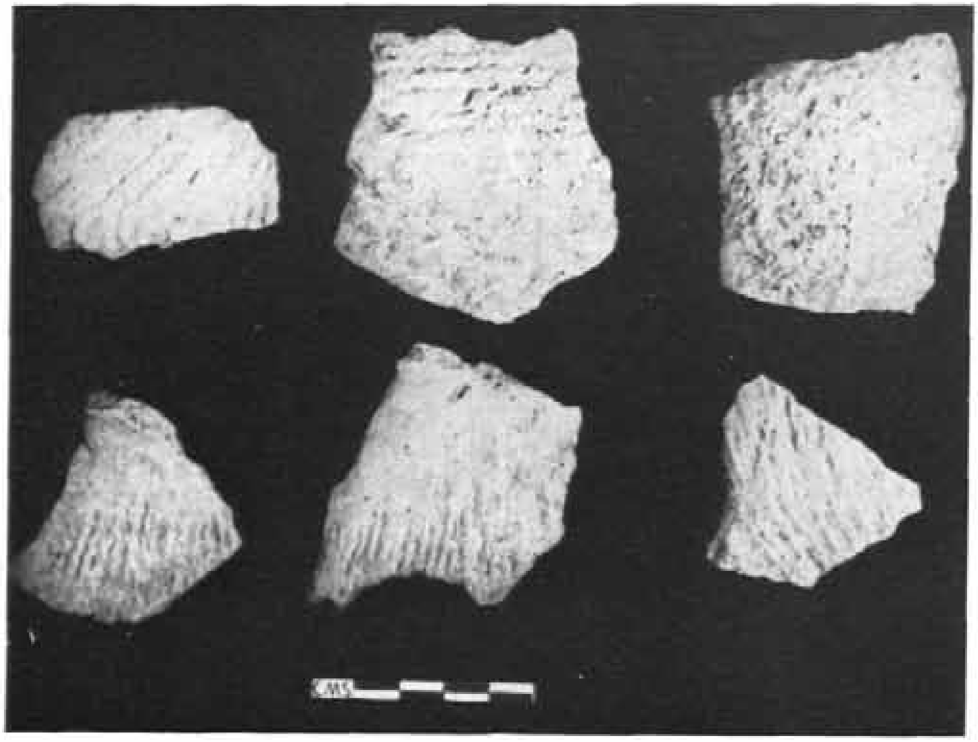
B



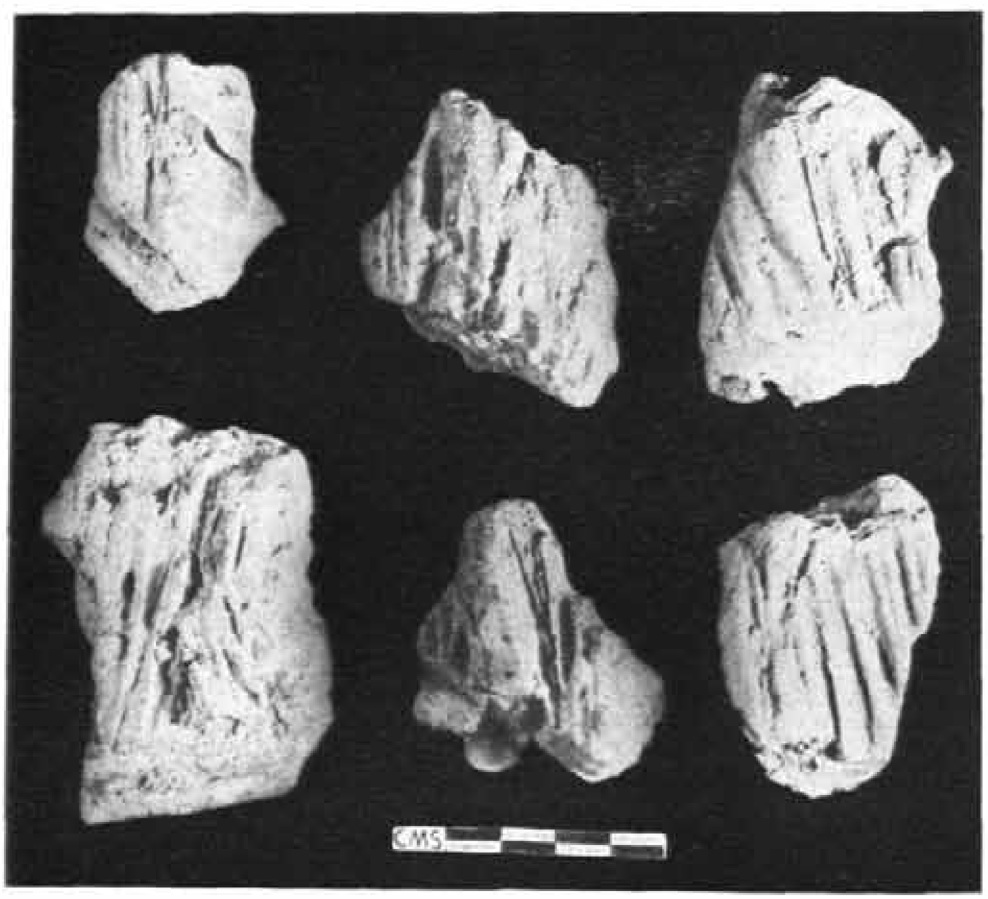
A



B



A

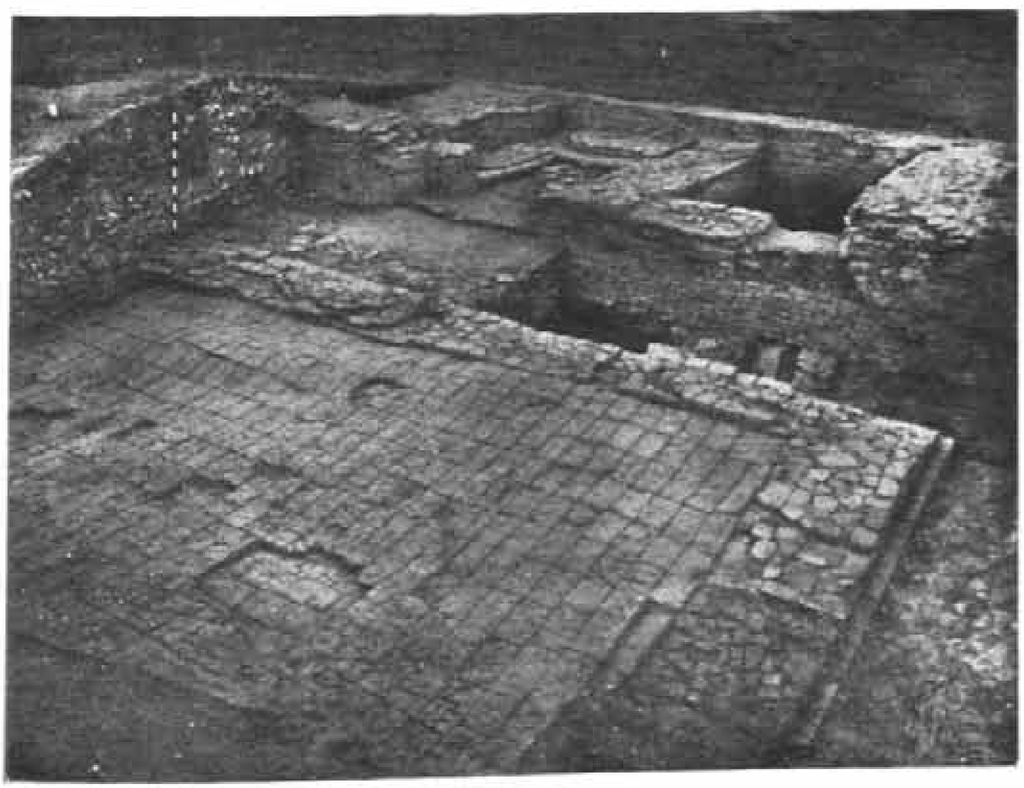


B

Mahagara : A, *corded and rusticated wares*; B, *burnt daubs with wattle impressions*. *See p. 47*



A



B

Ganwaria : A, *larger structural complex showing five phases*; B, *smaller structural complex showing brick-paved courtyard*. *See pp. 47 and 49*



A



B

Ganwaria : A, *exposed secular complex north of larger complex*; B, *exposed Shrine no. 2*. *See p.* 49





A B

Ganwaria : A, *Buddha head*; B, *Buddha in dhyana-mudra, both in terracotta.* *See p.* 50



B

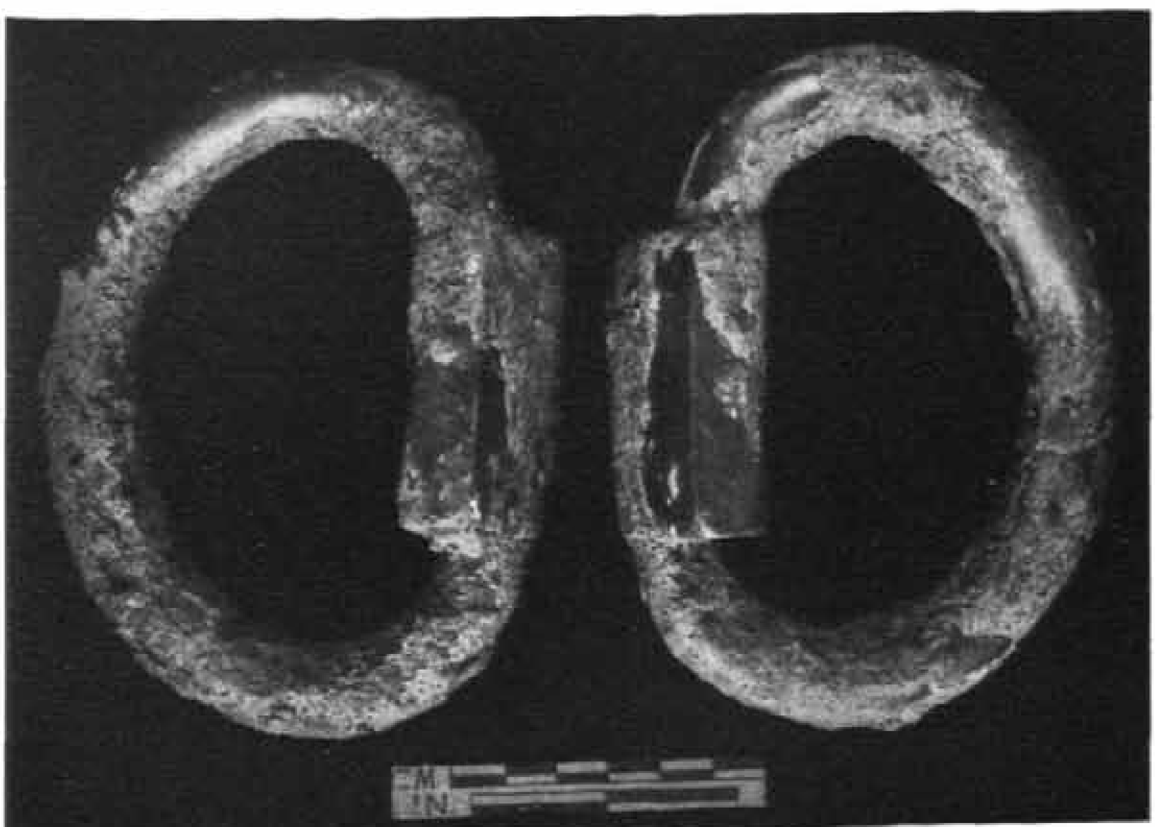


A

Ganwaria : A, *terracotta female figurines*; B, *decorated stone disc. See p. 50*



A



B

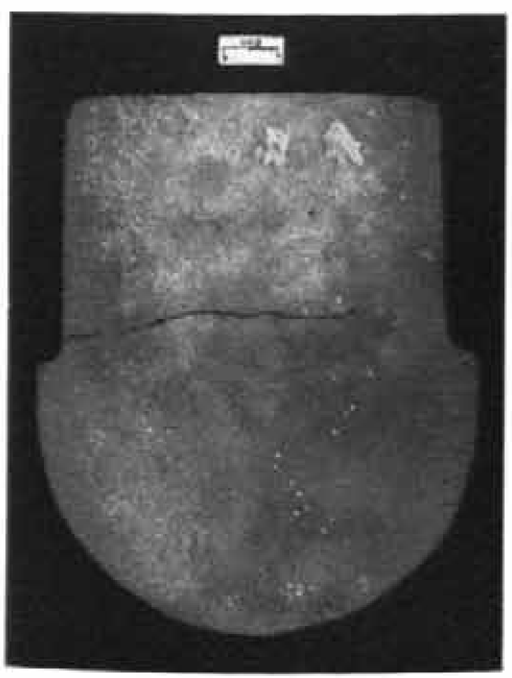


B



A

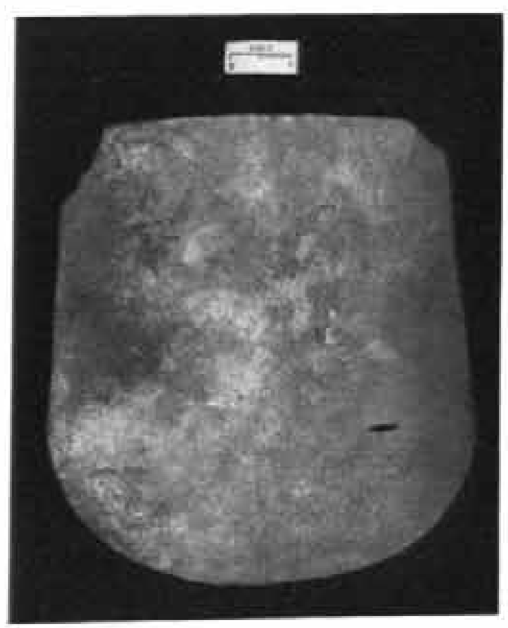
Ganwaria : terracotta figurines, A, three-eyed head (Siva); B, head with a peculiar head-dress. See p. 50



A



B



C

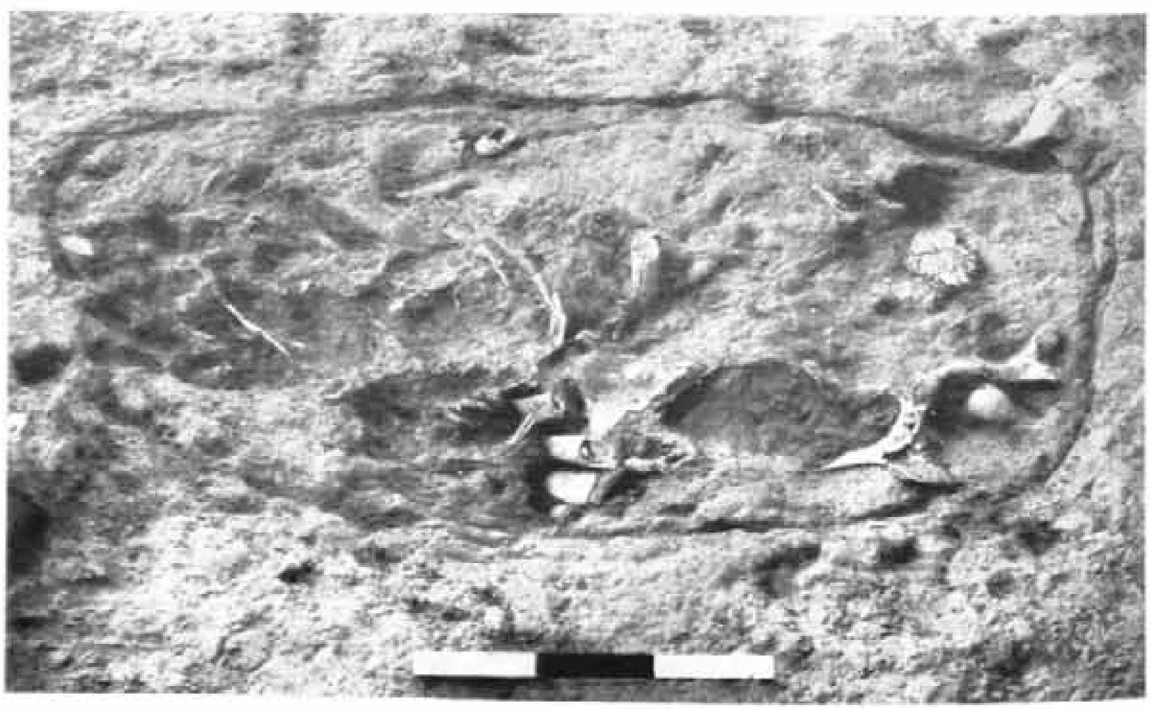


D

Madnapur : two copper axes with incised design of bulls. *See p. 52*



A



B

Mathura : A, *mud-flooring with post-holes, Period II*; B, *pit with animal bones, Period III*. See p. 55



A



B

Mathura : A, *mud-platform with baked-brick facing, Period II*; B, *view of tank-complex, Period IV.* *See p. 55*



C



B



A

Mathura : *terracotta figurines*, A, *lute player*, *Period III*; B, *mother and child*, *Period IV*; C, *a prince*, *Period IV*. *See p. 55*

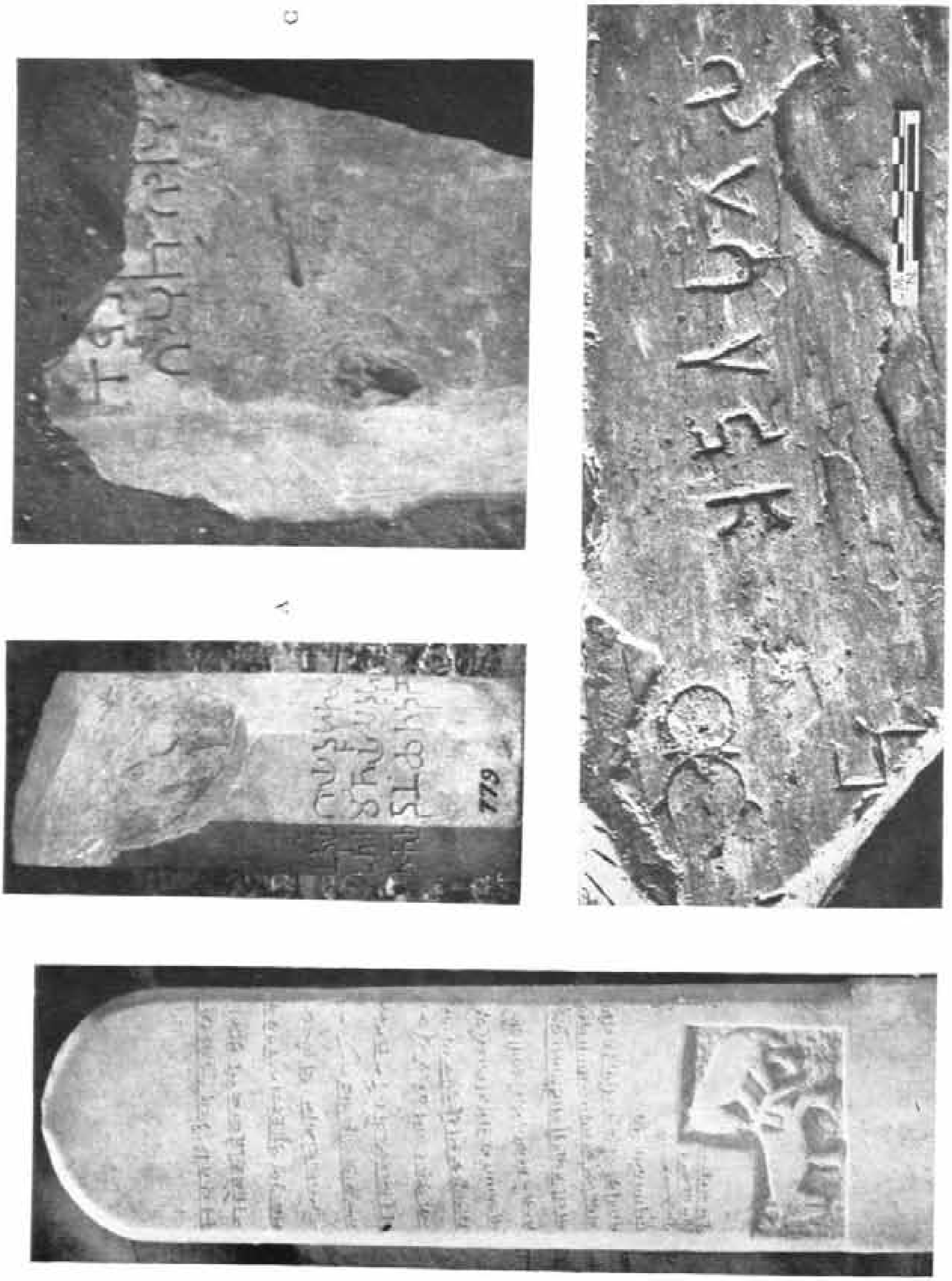


B



A

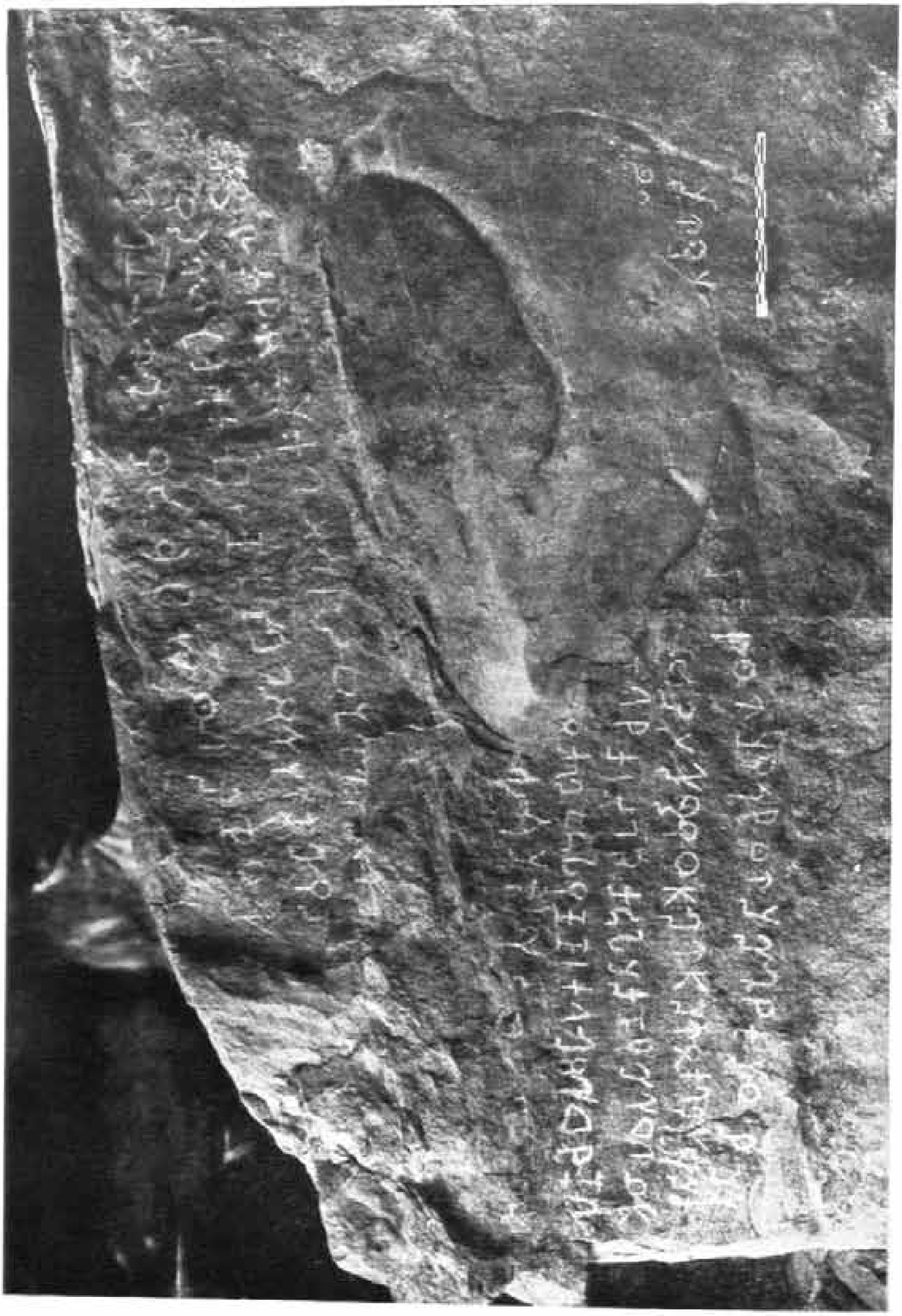
Mathura : terracotta figurines, A, mould and impression of yakshi, and B, a Saka or Kushan soldier, obverse and reverse views, Period IV. *See p. 55*



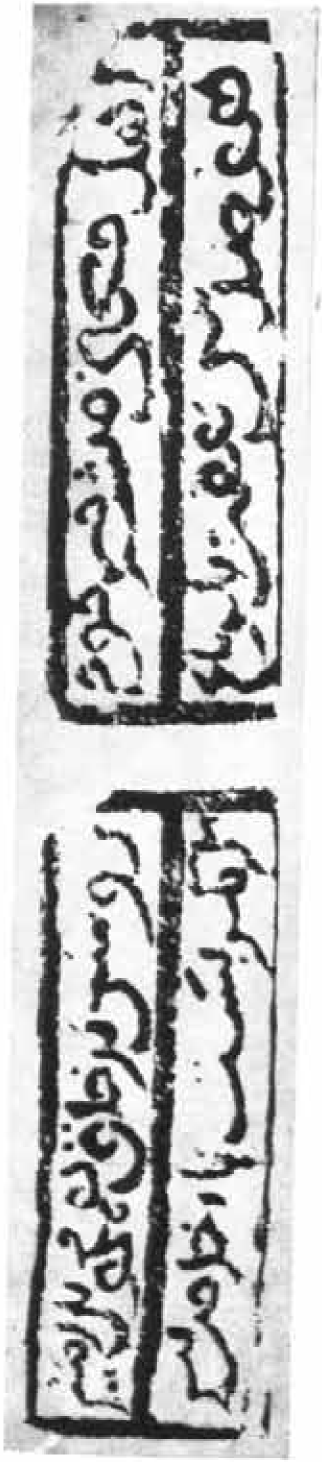
A, *Amaravati* : *Brahmi inscription of first century A.D.*; B, *Ahmadabad* : *inscription of A.D. 1667*; C, C, *Hampi* : *early Brahmi inscription*; D, *Talpura* : *Asokan Brahmi inscription*. *See pp. 60, 62 and 63*



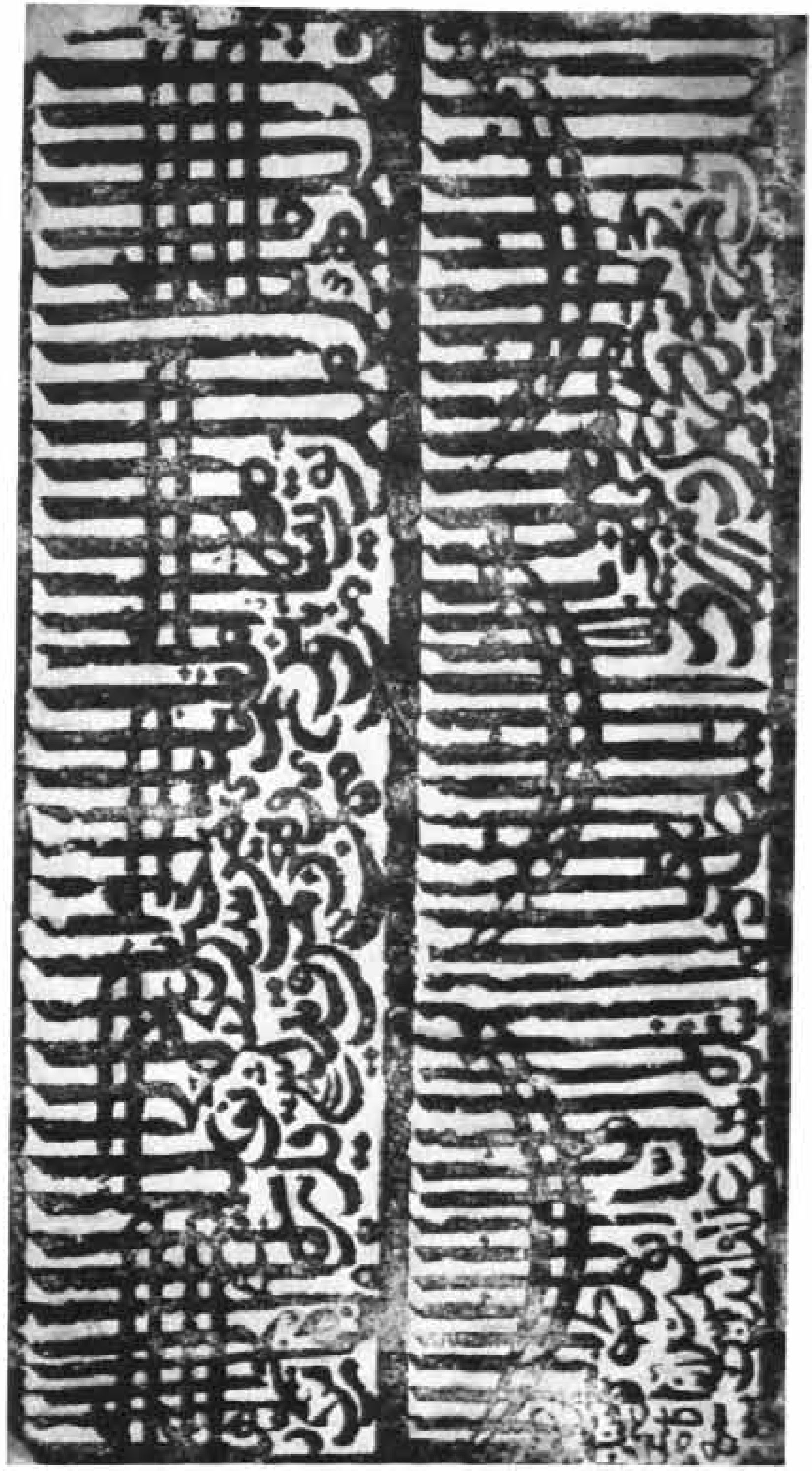
Pangoraria : *Asokan inscription on the façade of a cave.* *See p. 63*



Pangoraria : Asokan Minor Rock-edict. *See p. 63*



A



B

A. *New Delhi : epitaph of Khwaja Mubashshir; B. Saata : inscription of Husain Shah.* *See pp. 67, 71*

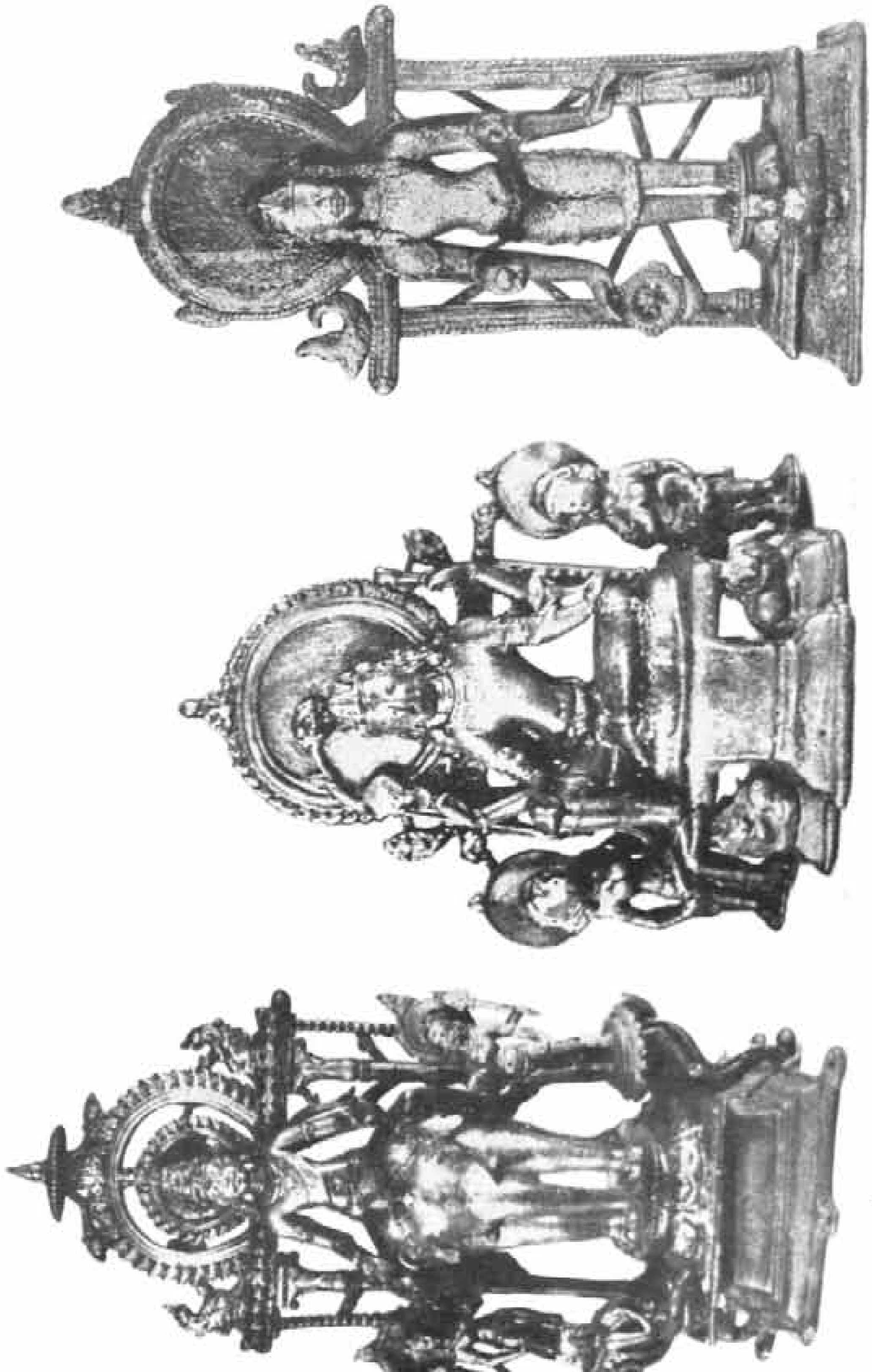




A B

Indian Museum, Calcutta : A, *image of Vishnu, eighth century A.D.* ; B, *image of Bhairava.* *See p. 90*

PLATE LXVII

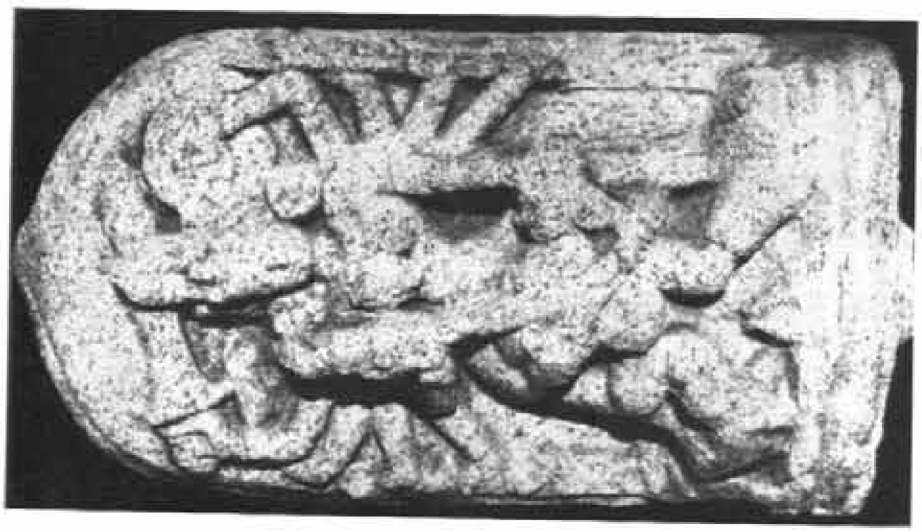


A B C

State Museum, Assam, Gauhati : images of, A, Indra ; B, Manasa; C, Vishnu. *See p. 90*



A

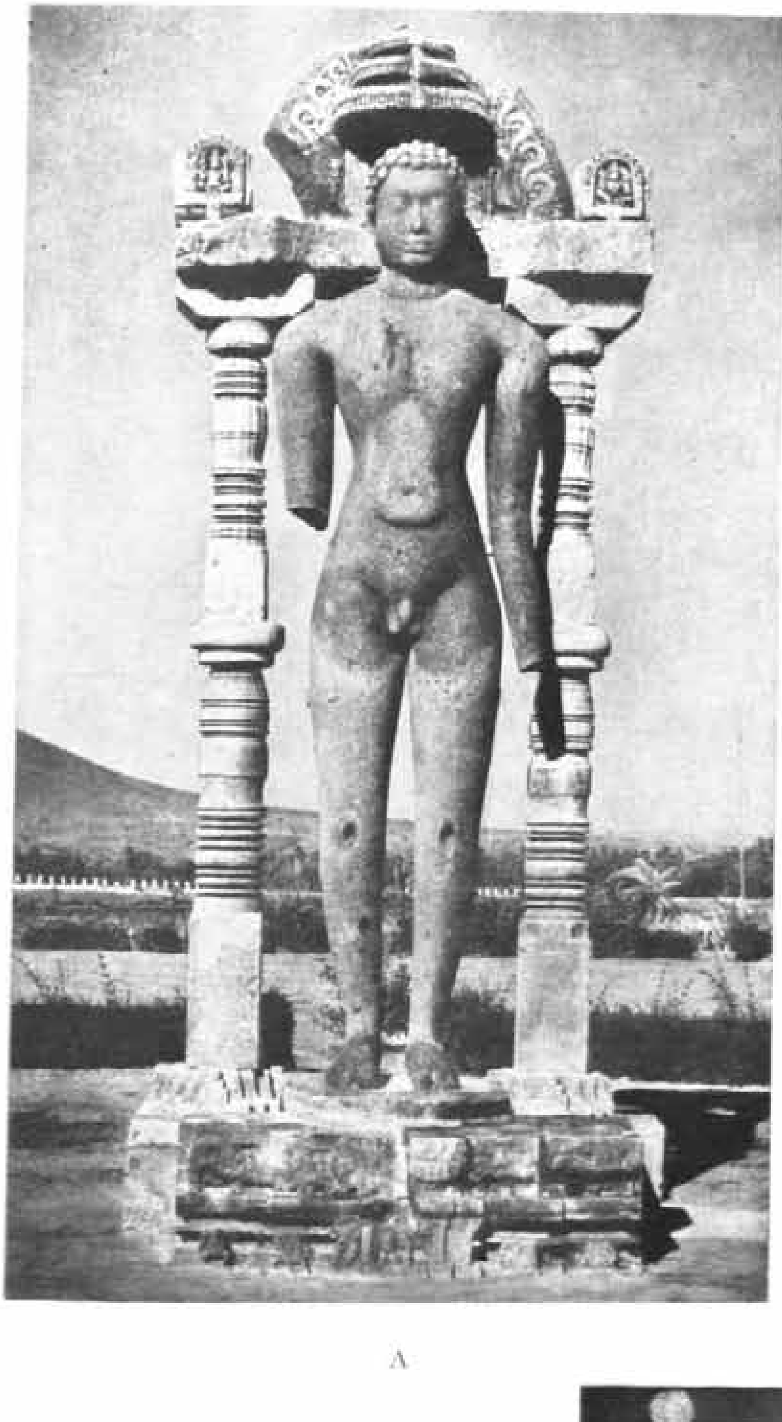


B



C

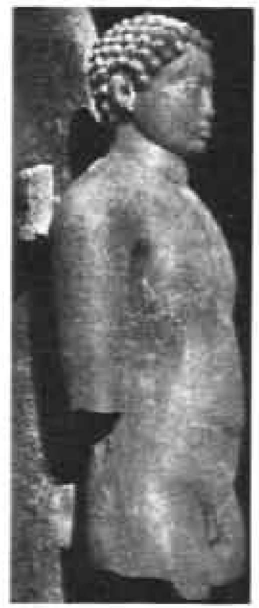
State Museum, Assam, Gauhati : *images of* A, *Vishnu* ; B, *Mahishamardini* ; C, *Surya*. *See p. 91*



A



B



C



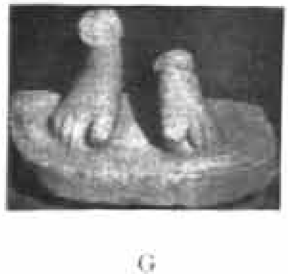
D



E



F



G

Archaeological Museum, Halebid : A, *standing figure of Adinatha, after mending*; B—G, *fragments of Adinatha,*



A B C

National Museum, New Delhi : A, *image of Maitreya, second century A.D.*; B, *Vishnu with consorts, from Bengal*;
C, *dvarapala, ninth-tenth century A.D.* *See p. 94*

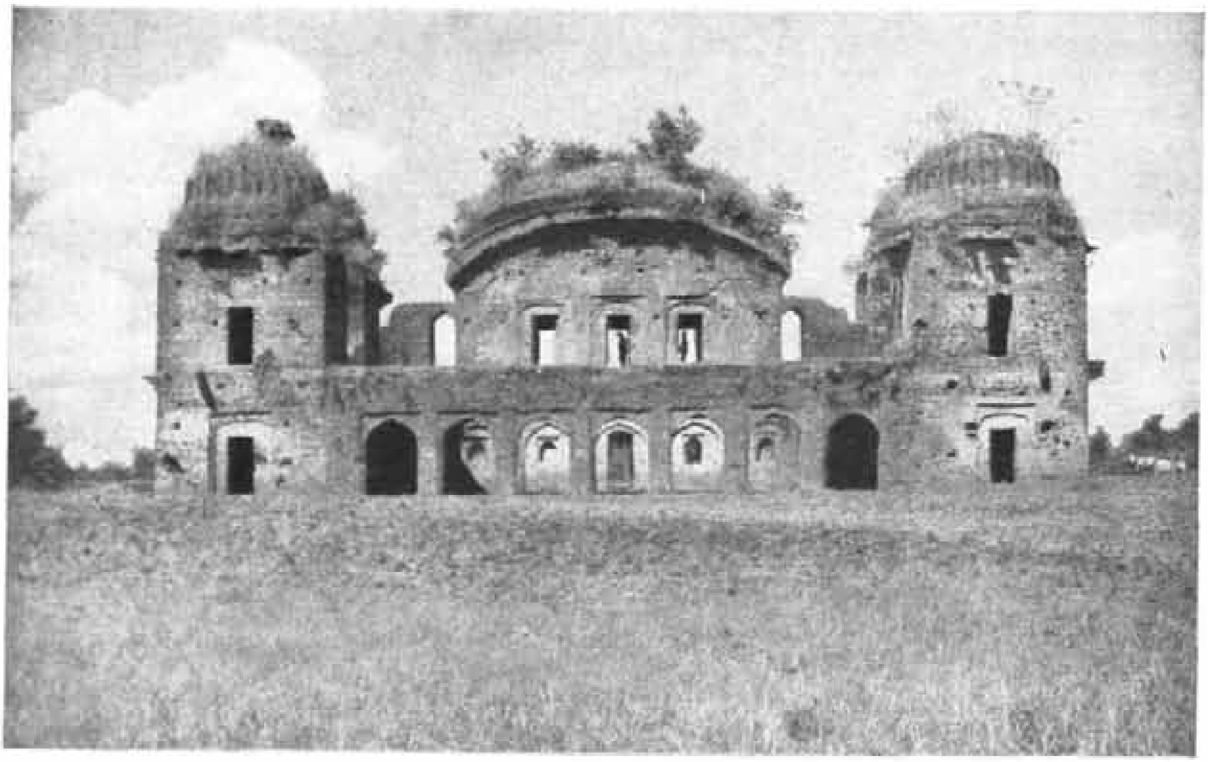


A

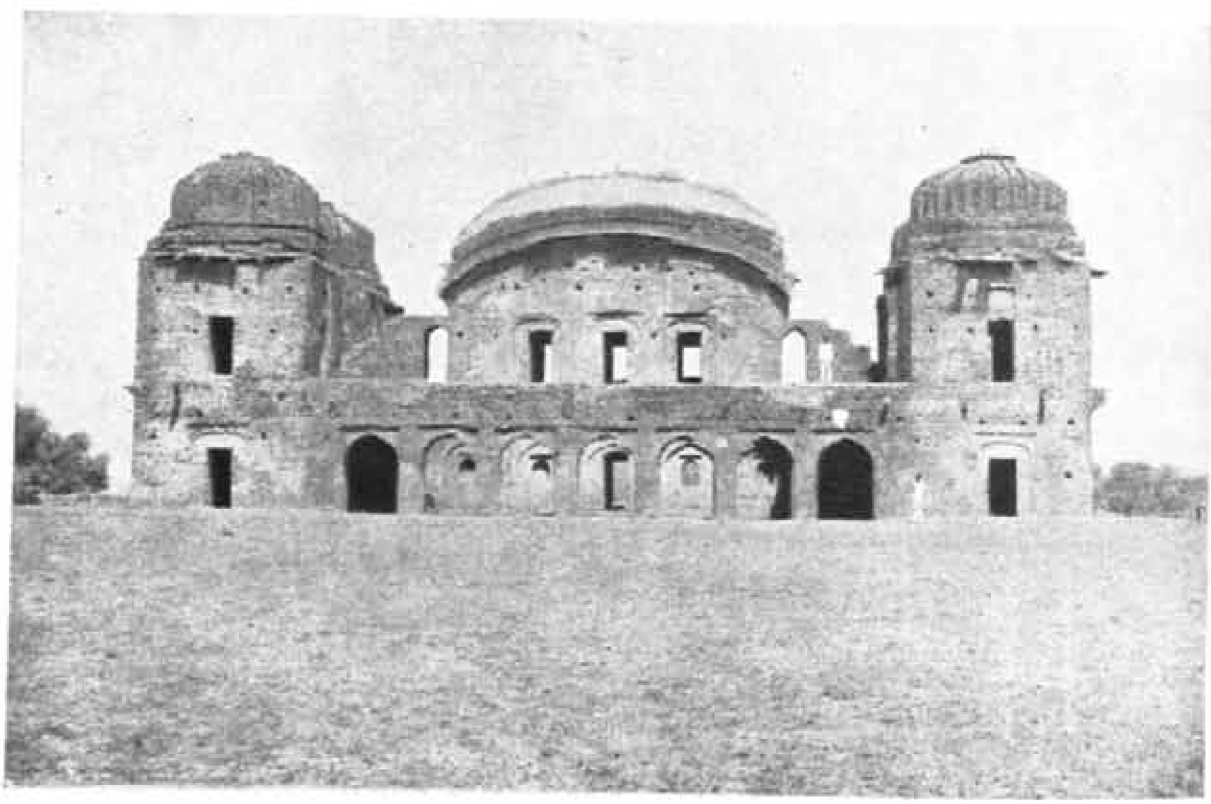


B

Reorganized galleries : A, *Fort St. George Museum, Madras*; B, *Archaeological Museum, Velha Goa.* *See pp.* 93, 95

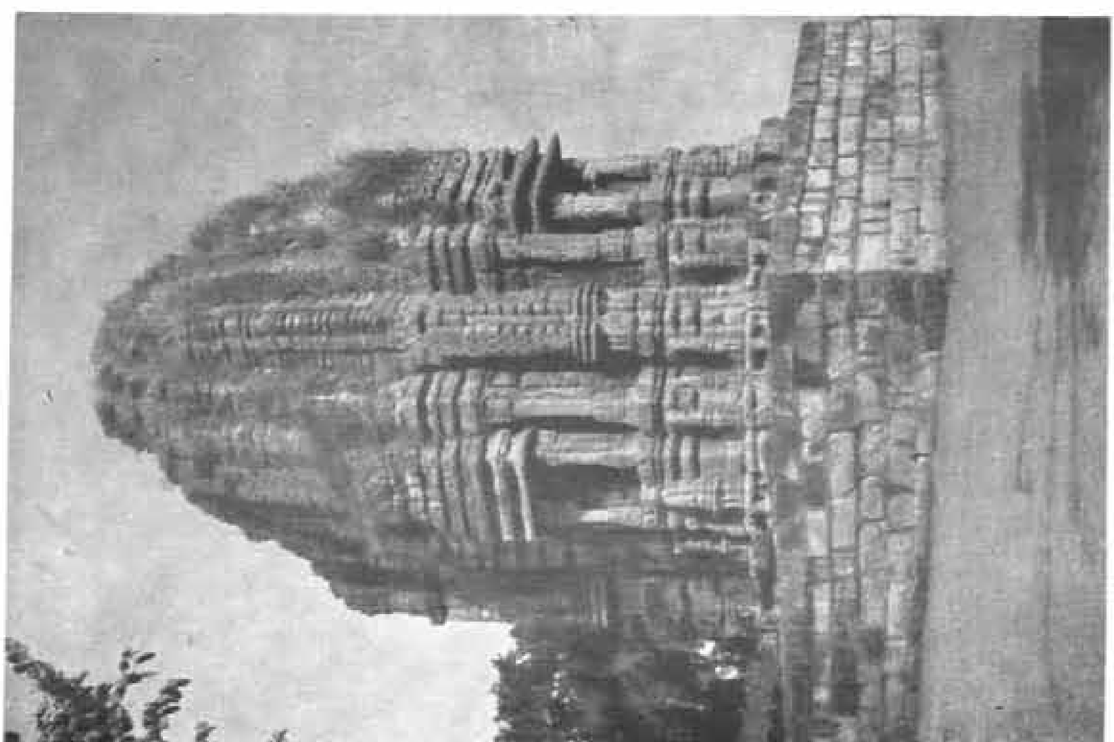


A

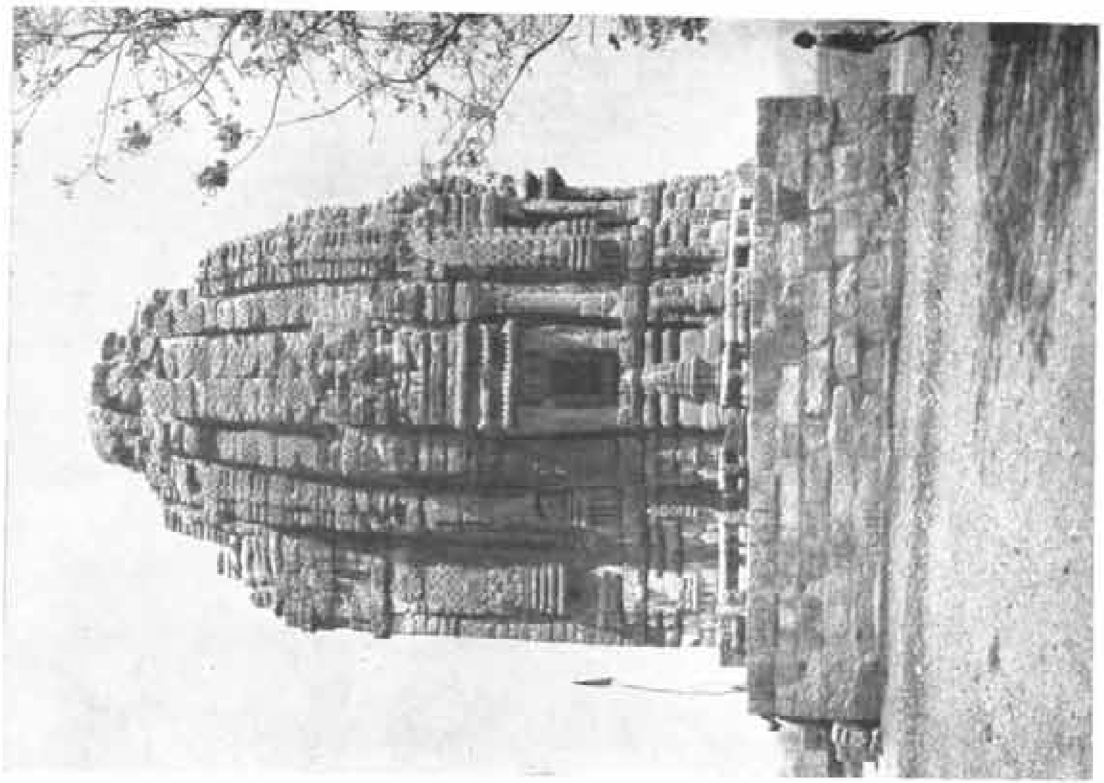


B

Chaugan : Begum Mahal, A, *before and* B, *after conservation*. See p. 97

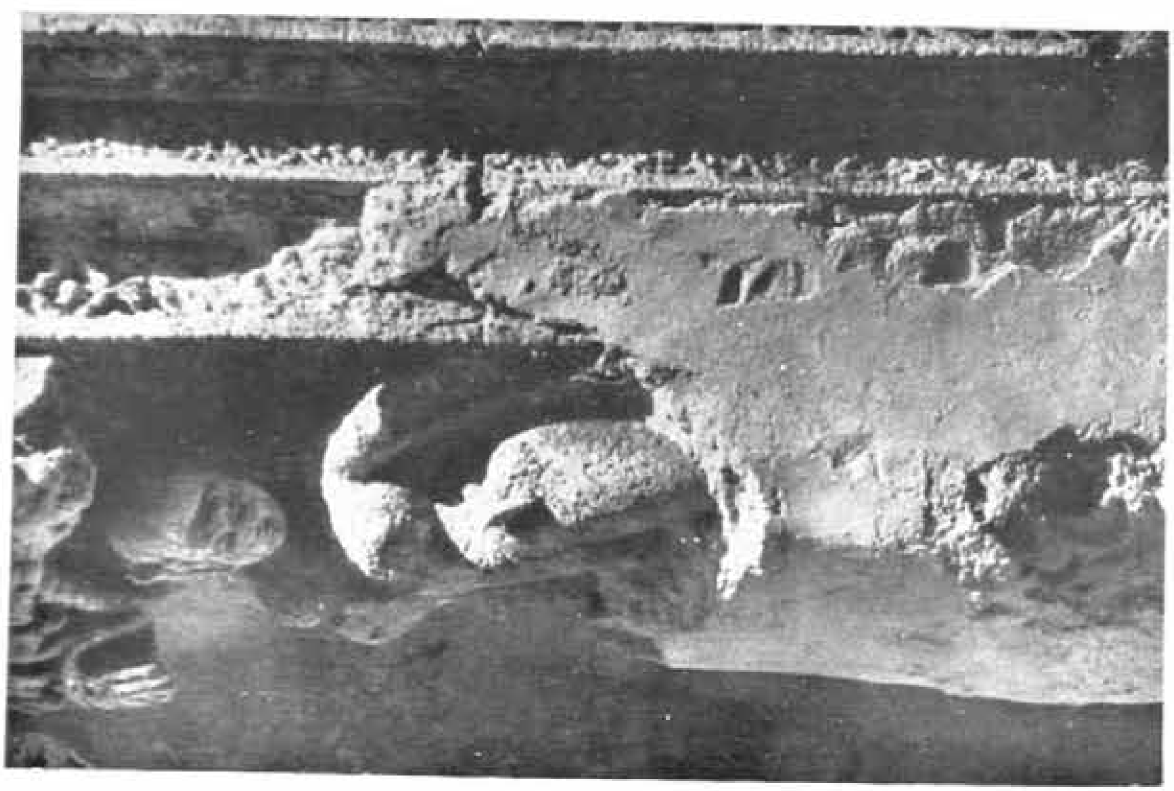


A



B

Kakairanath : Ranmuktesvara temple, A, *before and* B, *after conservation.* *See p. 97*



A

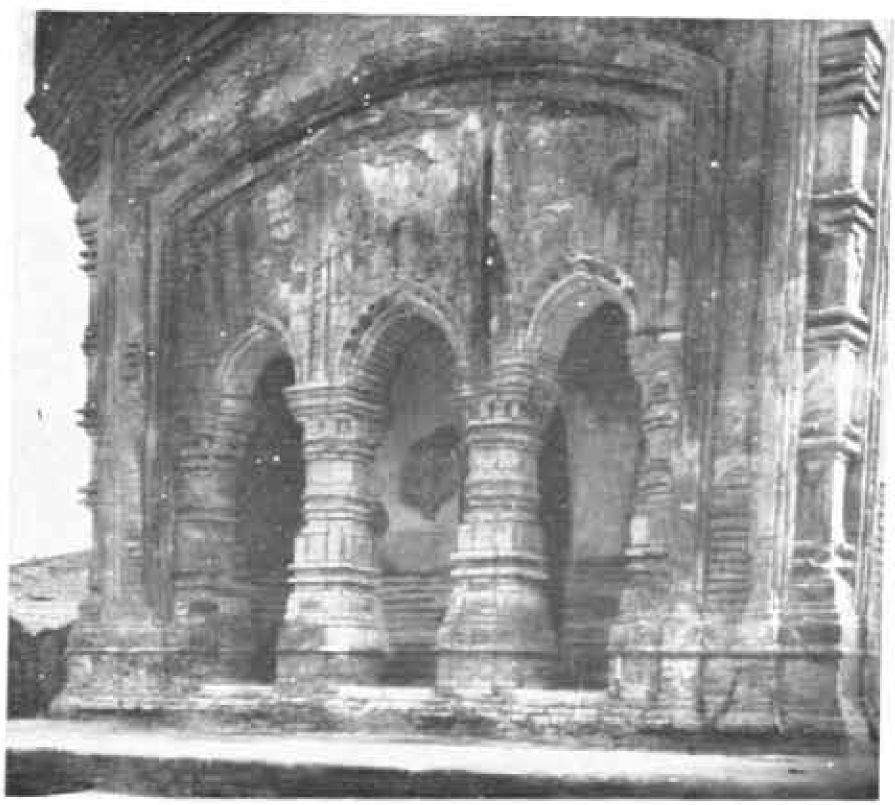


B

Puri : Lakshmi temple, A, before and B, after removal of plaster. *See p. 100*

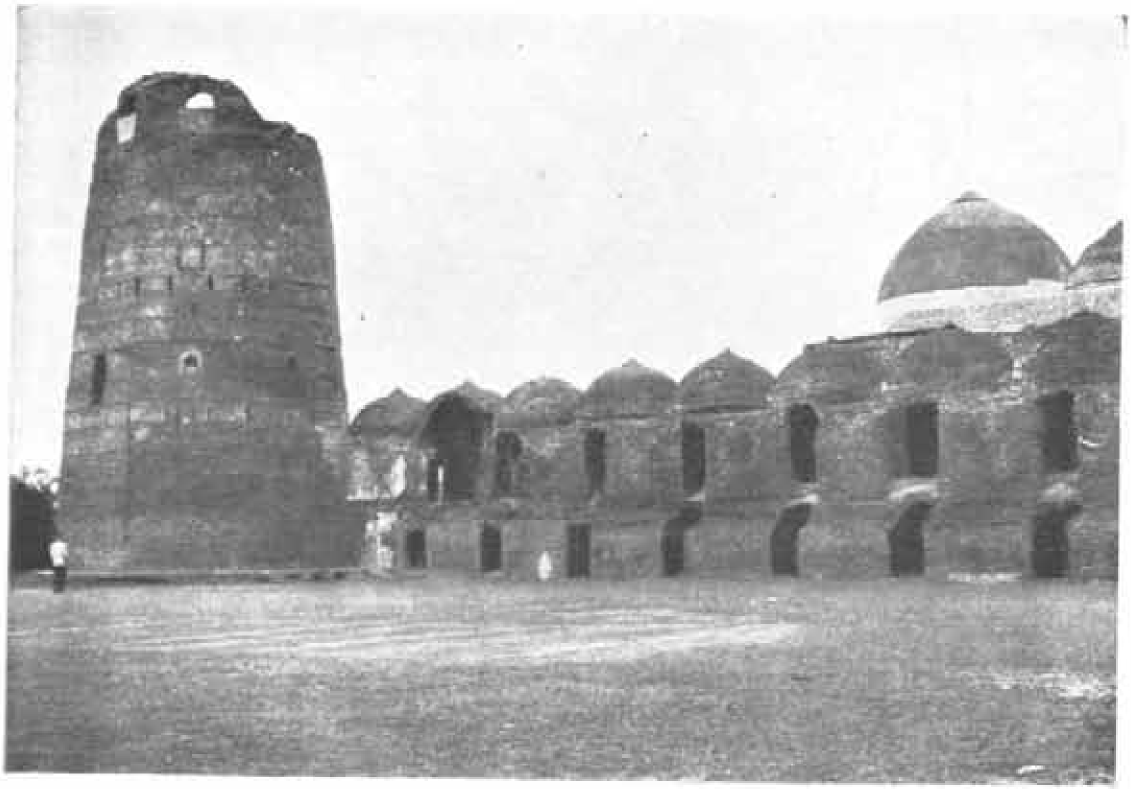


A

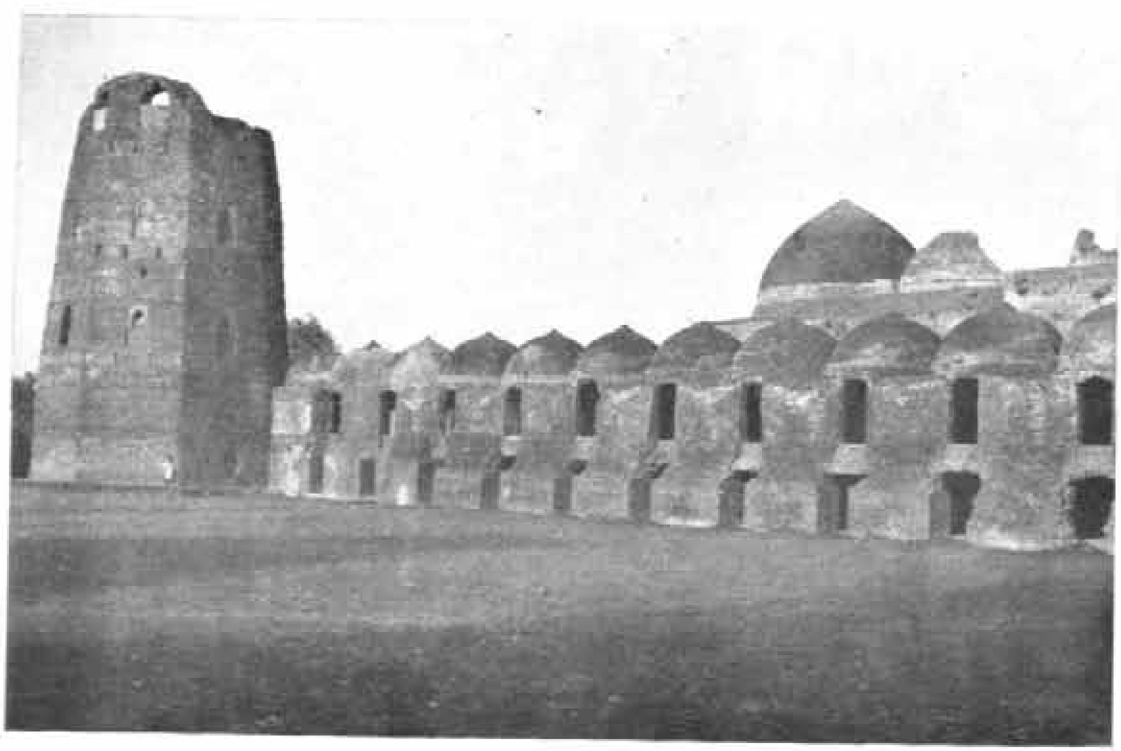


B

Kalna : Ratnesvara temple, A, *before and* B, *after conservation.* *See p. 100*



A



B

Katra mosque, A, *before and* B, *after conservation.* *See p. 101*

A



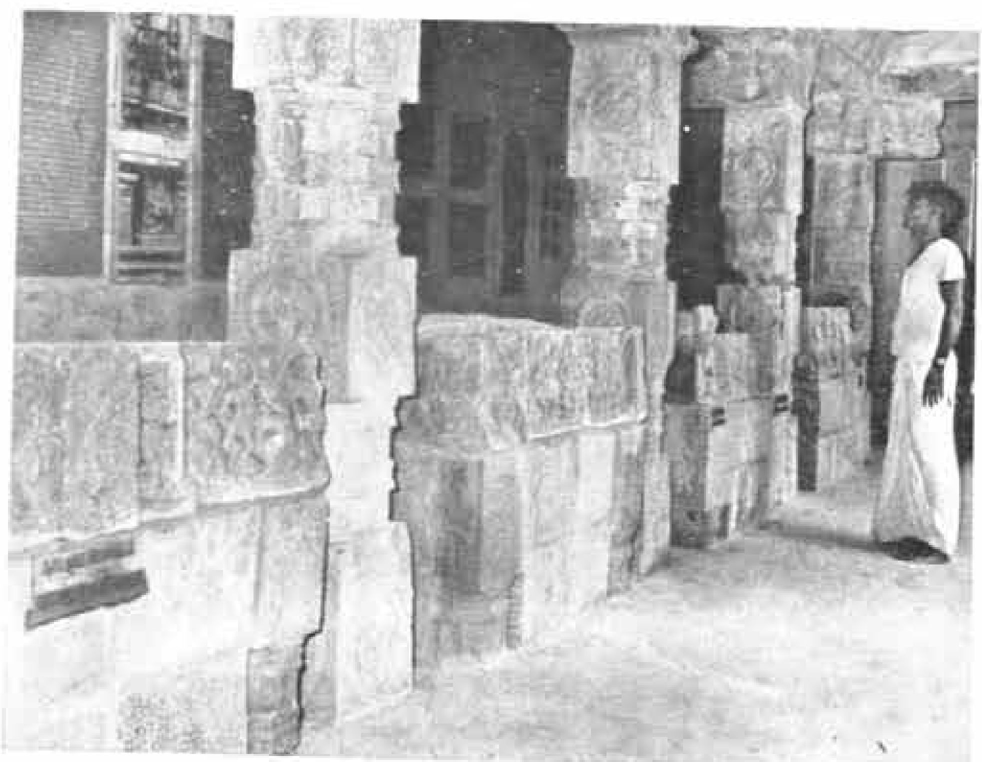
B



Kanchipuram : Kailasanatha temple. A, before and B, after removal of plaster. *See p. 111*



A

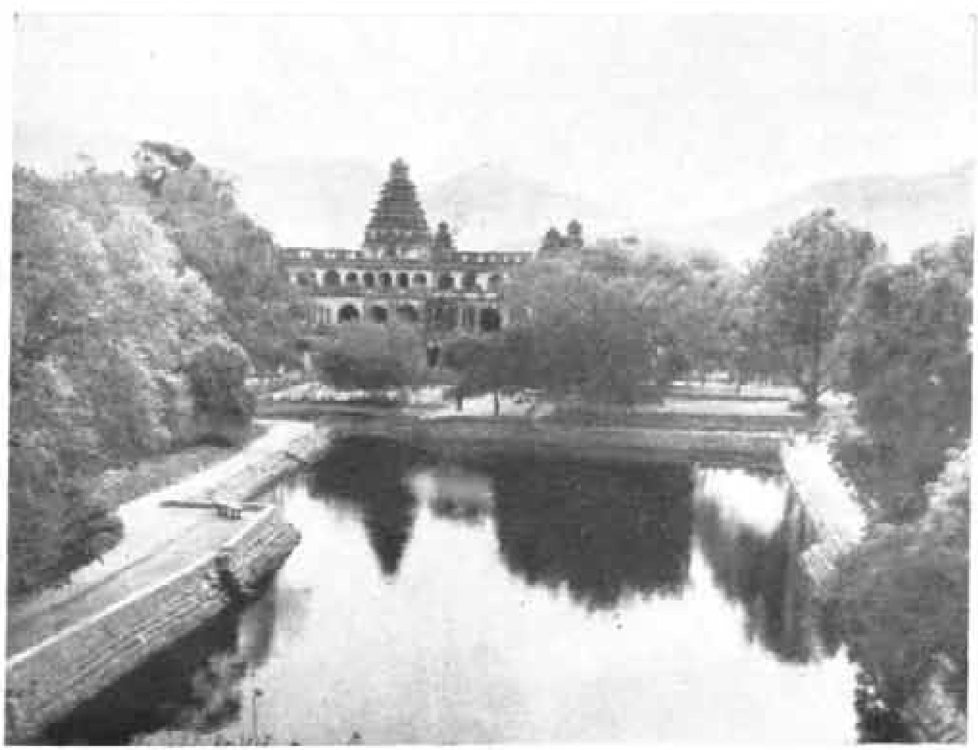


B

Darasuram : Airavatesvara [illegible]

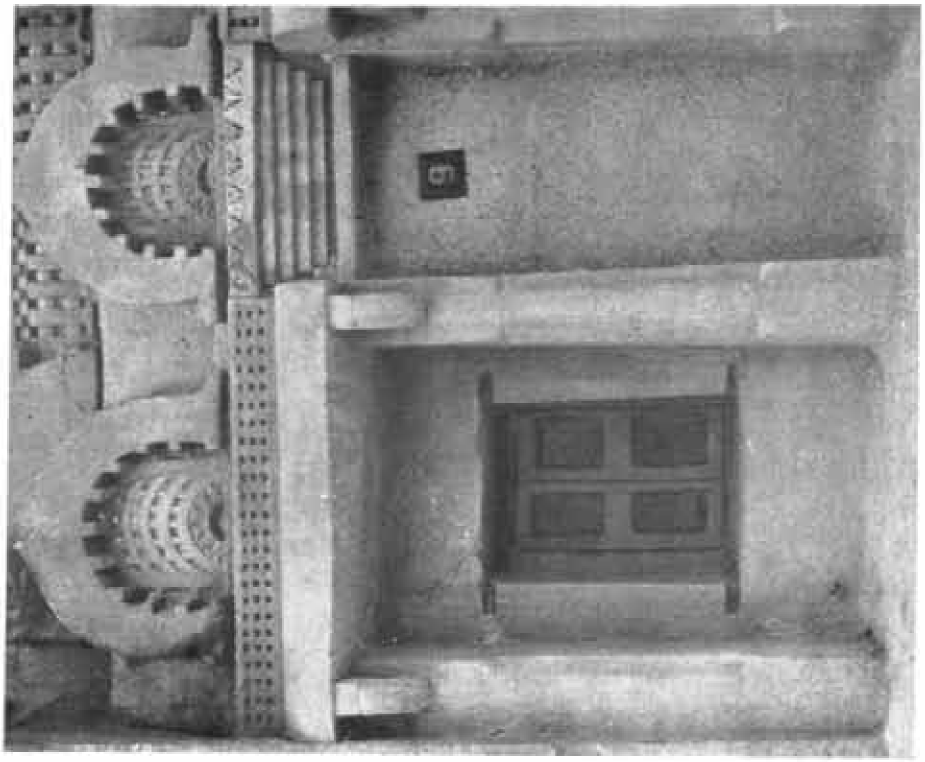


A

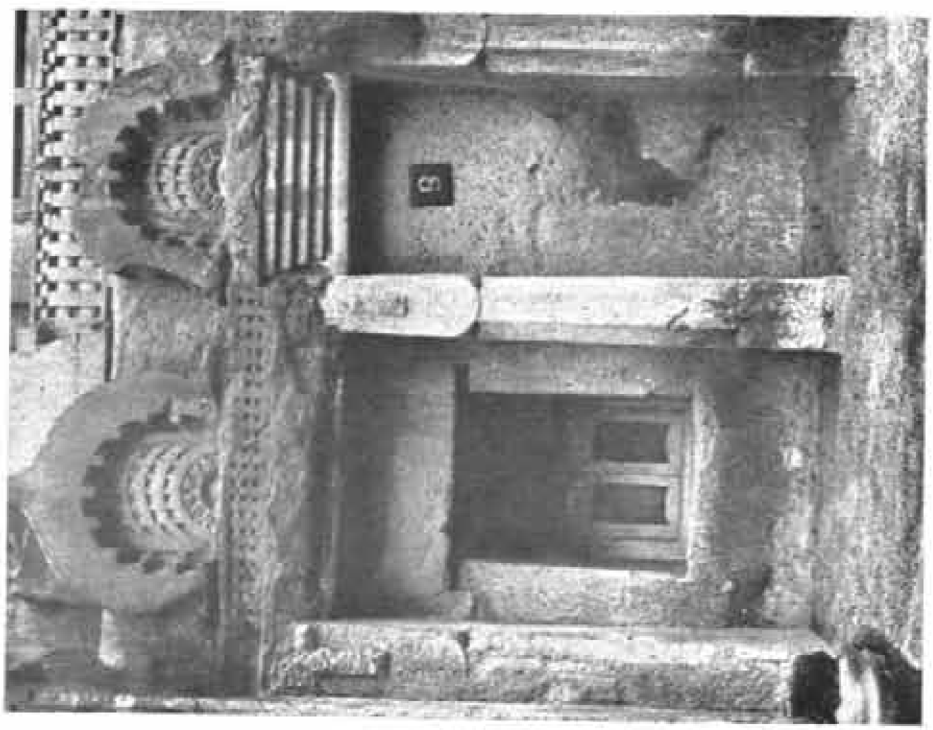


B

Chandragiri : ancient tank in front of Raja Mahal, A, before and B, after conservation. *See p. 116*

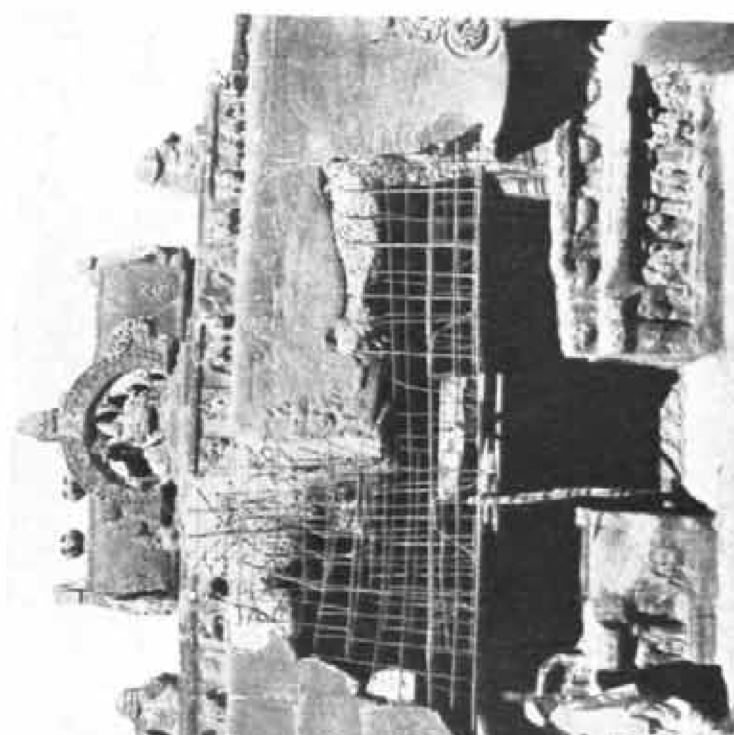


B

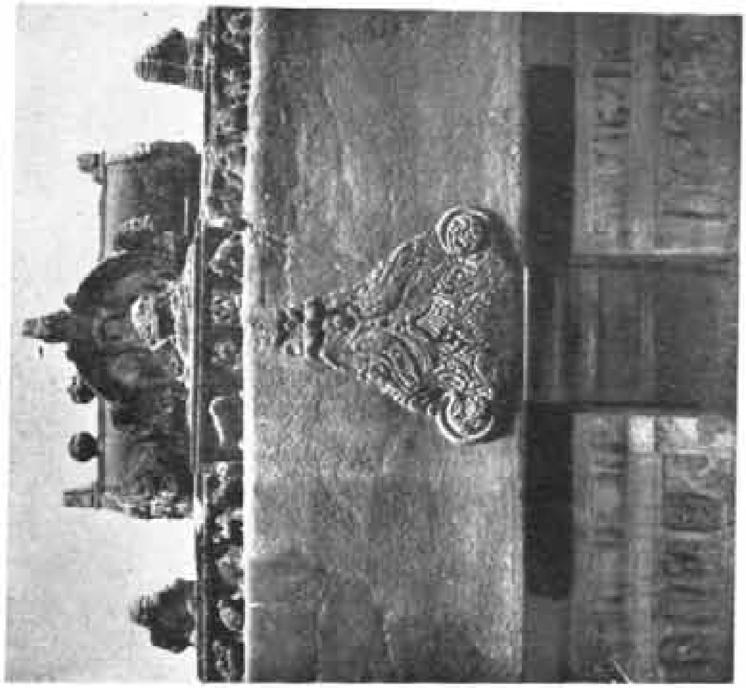


A

Ajanta : *Cave* 9, A, *before and* B, *after conservation.* *See p. 119*



A

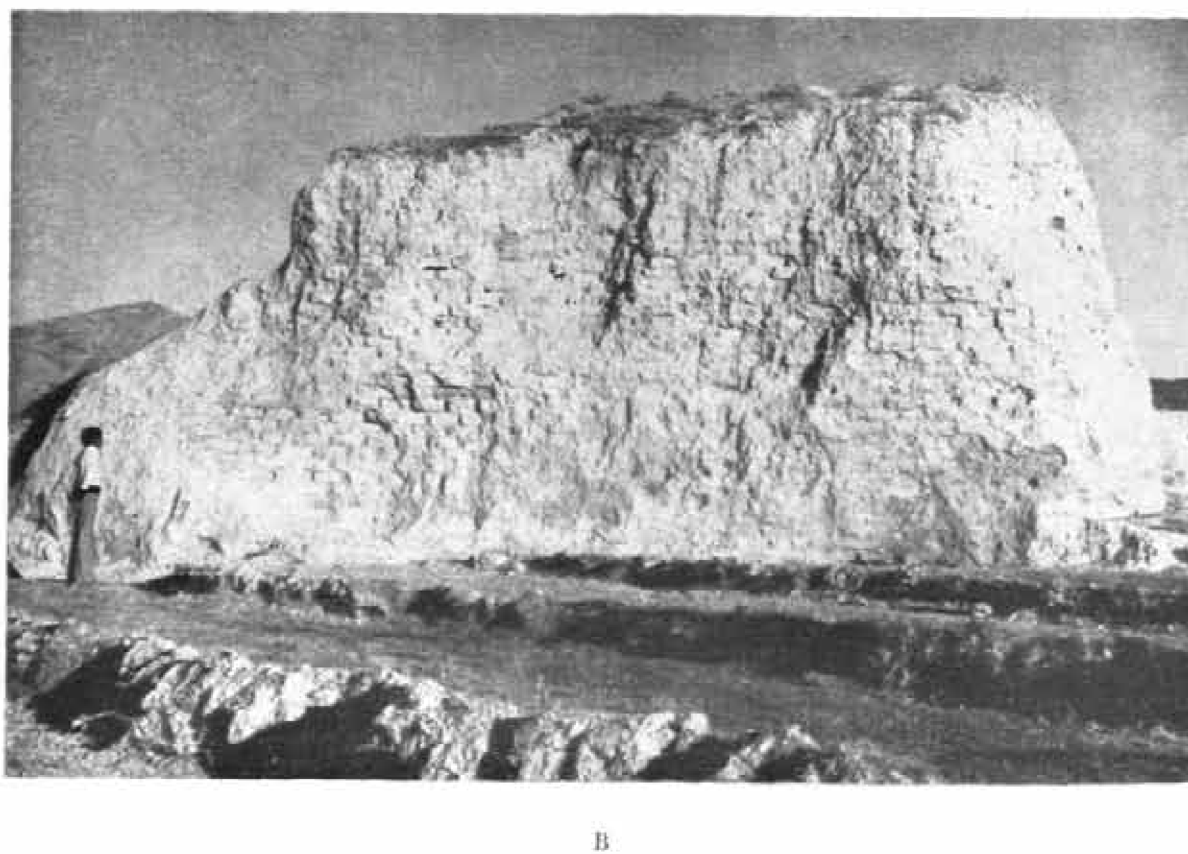


B

Ellora : rock-cut caves, A, before and B, after conservation. *See p. 120*



A

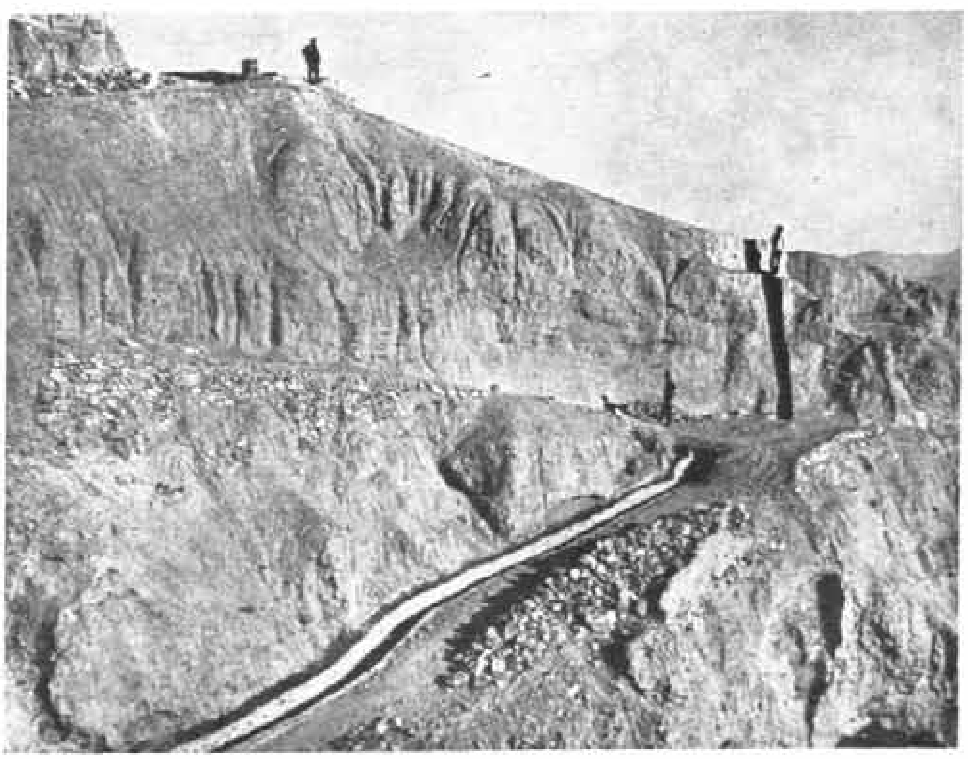


B

A, *Qila Faridan, Afghanistan : general view of the fort* : B, *Begram, Afghanistan : general view showing courses of mud-bricks*. See p. 127



A

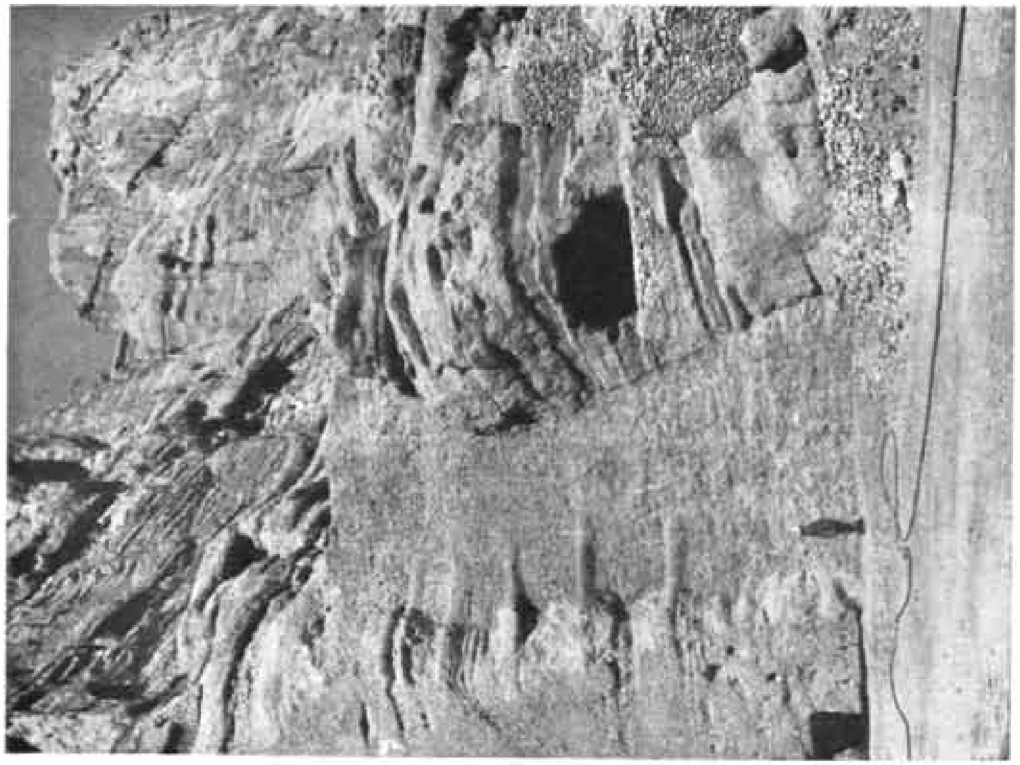


B

Bamiyan, Afghanistan : shrine of Big Buddha, A, *during and* B, *after conservation.* *See p. 128*



A

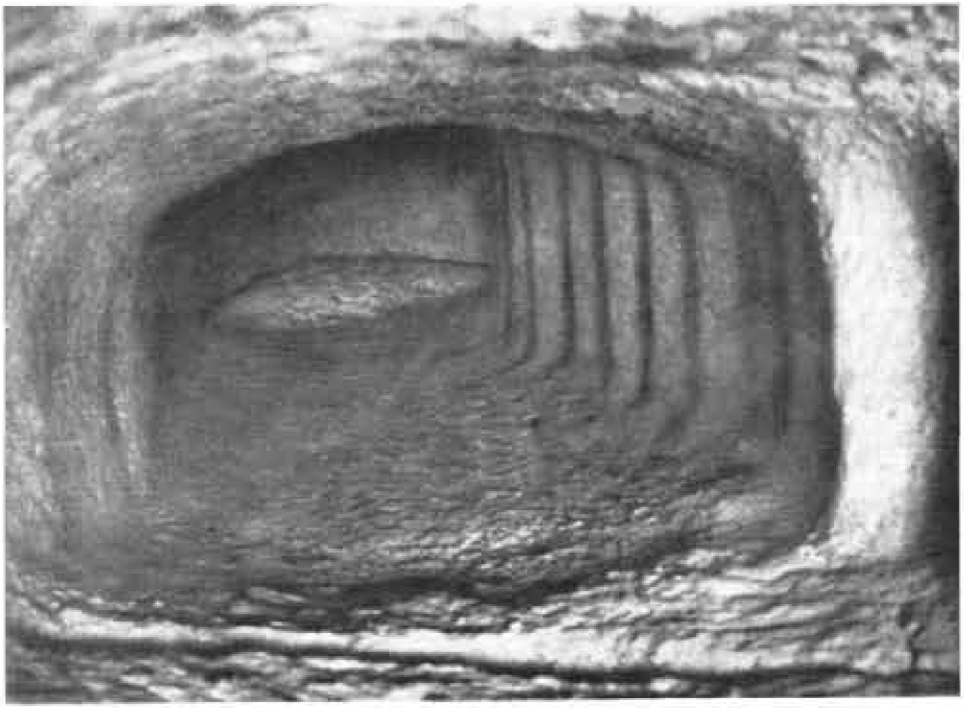


B

Bamiyan, Afghanistan : shrine of Big Buddha, A, before and B, after conservation. *See p. 128*

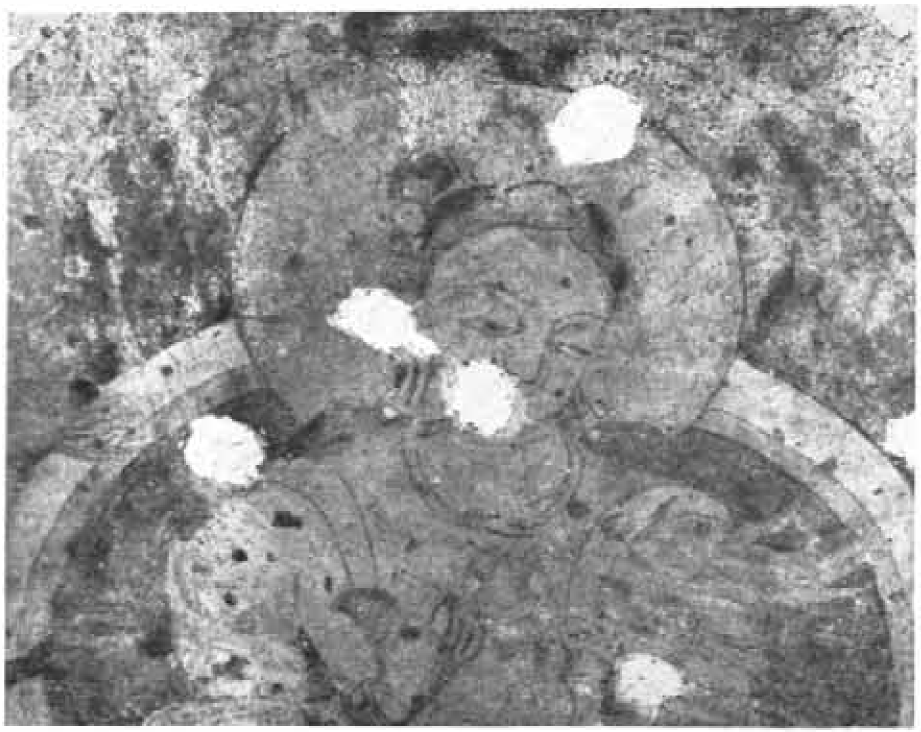


A



B

Bamiyan, Afghanistan : shrine of Big Buddha, A, before and B, after conservation. *See p. 128*



A



B

Bamiyan, Afghanistan : shrine of Big Buddha, wall-paintings, A, *before and* B, *after chemical treatment.* *See p. 128*

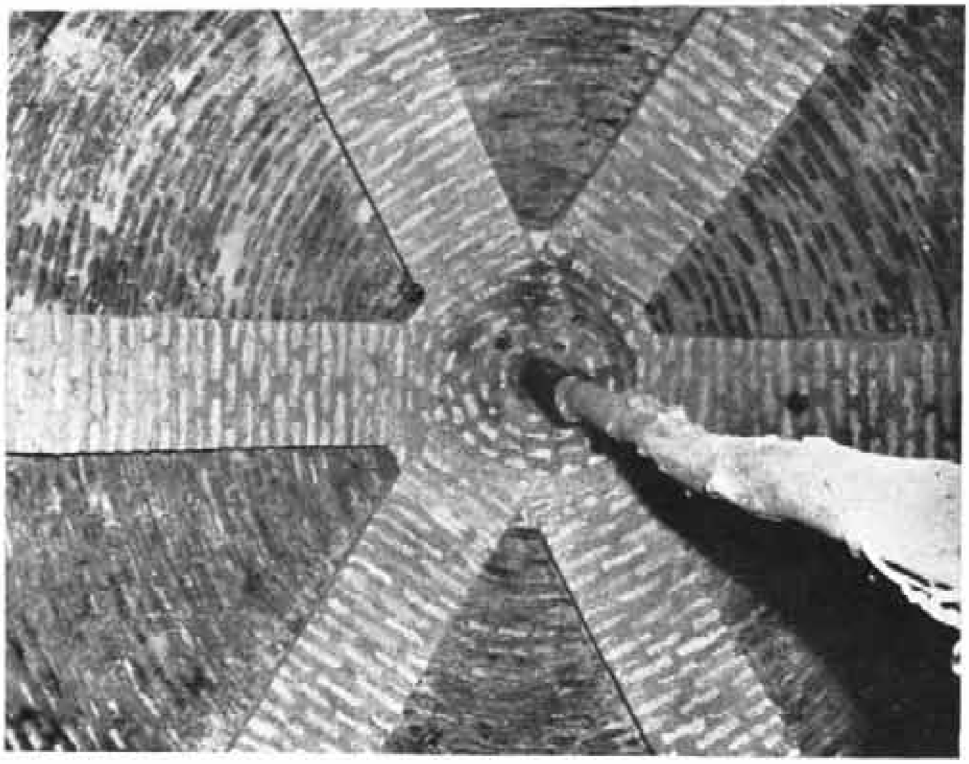


A

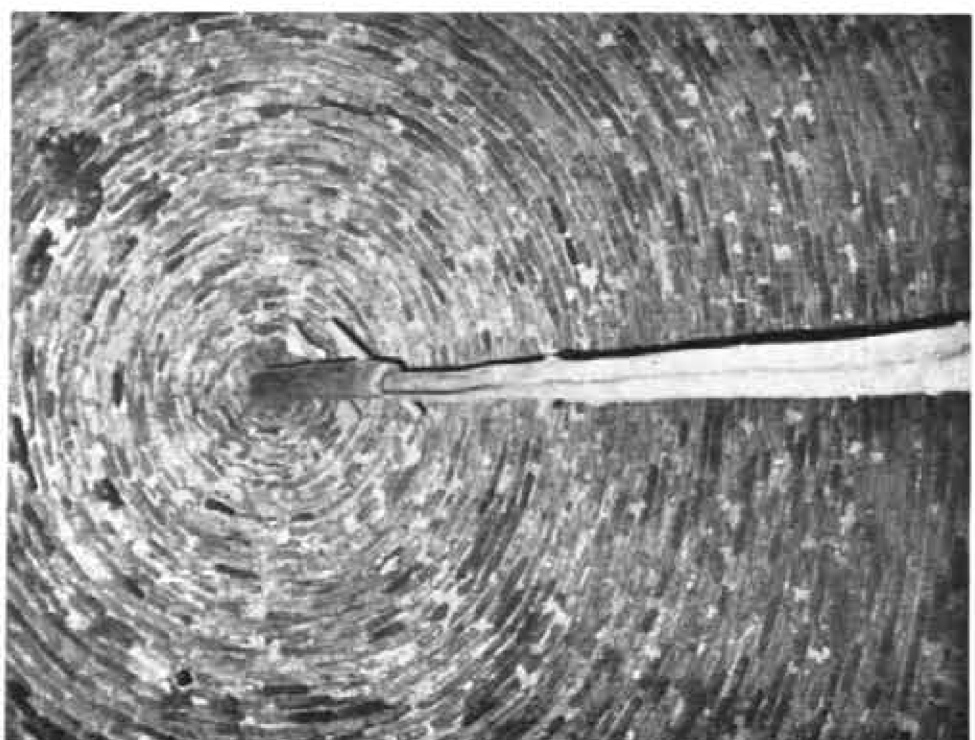


B

Bamiyan, Afghanistan : shrine of Big Buddha, stucco work, A, before and B, after chemical treatment. *See p. 128*

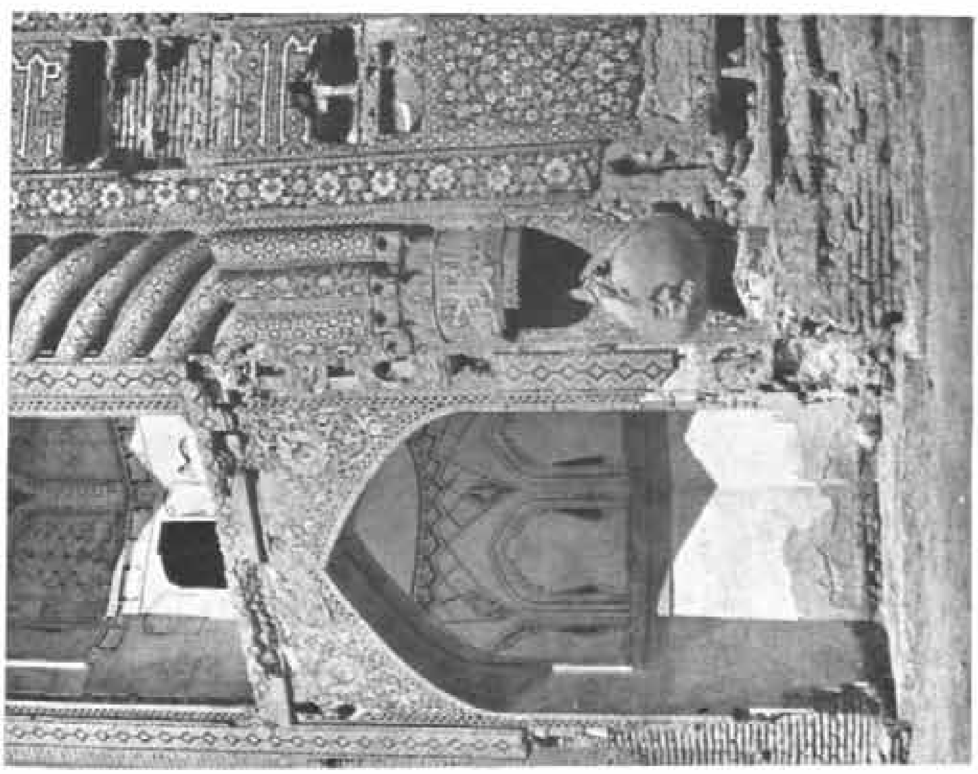


B

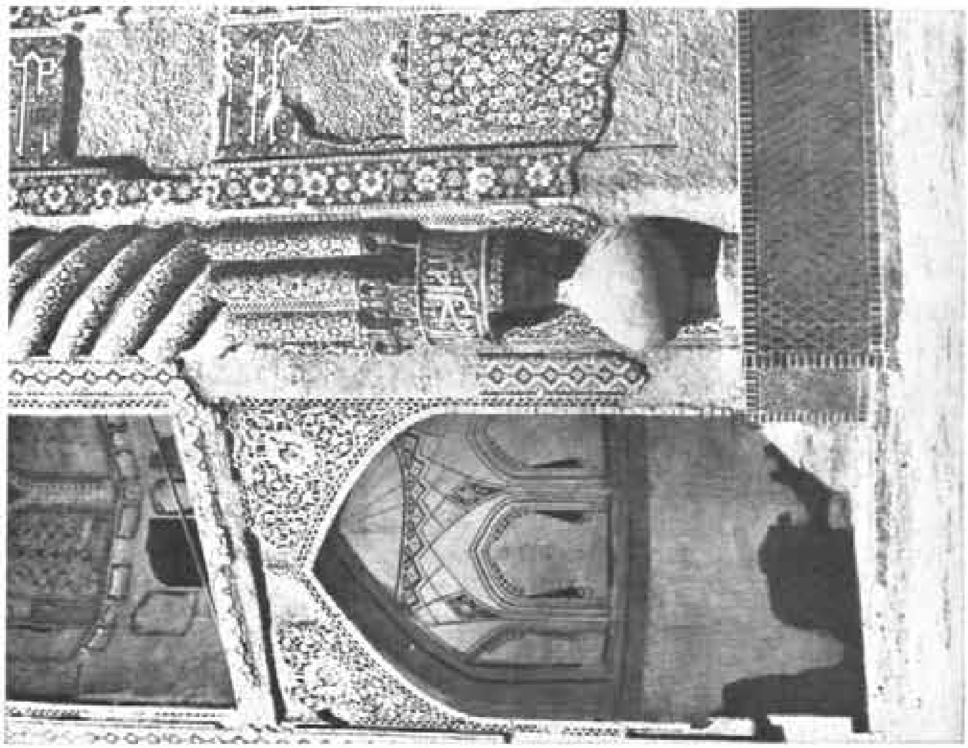


A

Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, before and B, during conservation. *See p. 128*

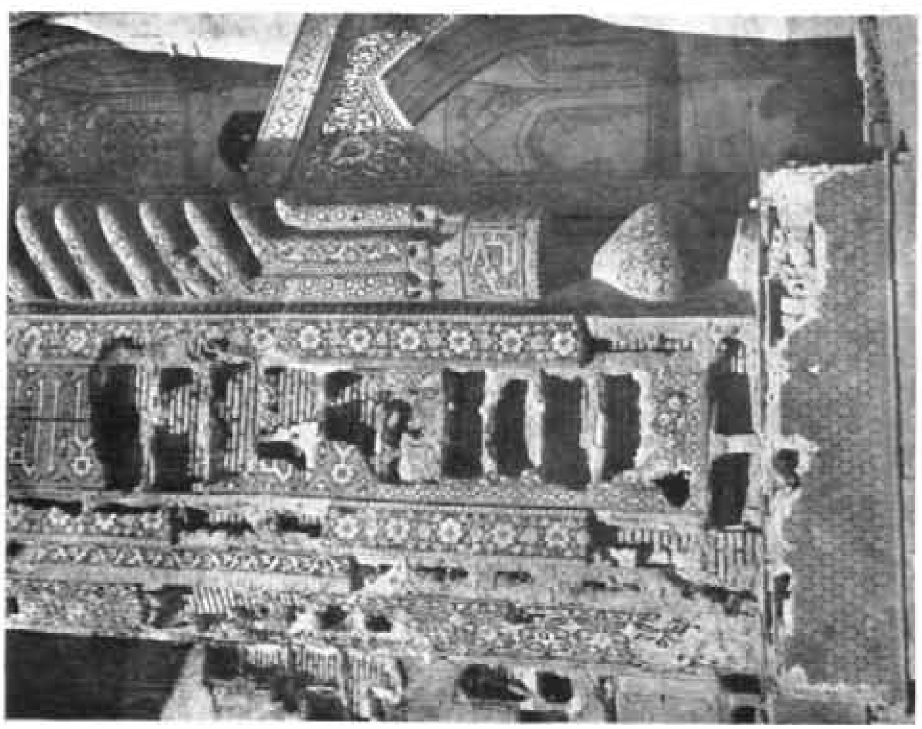


A

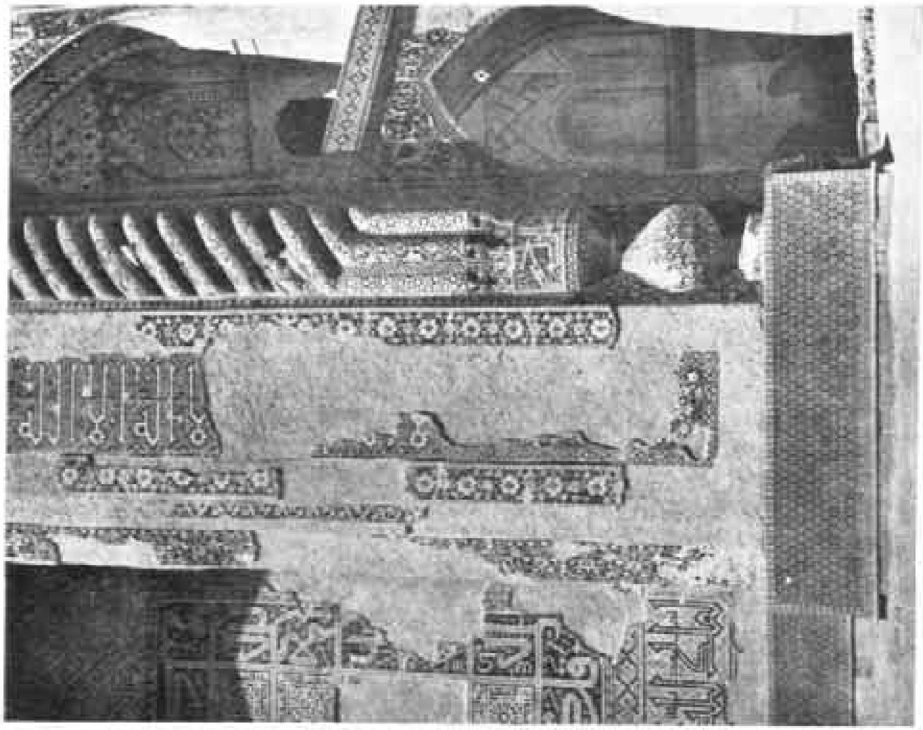


B

Balkh, Afghanistan: shrine of Khwaja Abu Nasar Parsa, A, before and B, after conservation. *See p. 128*

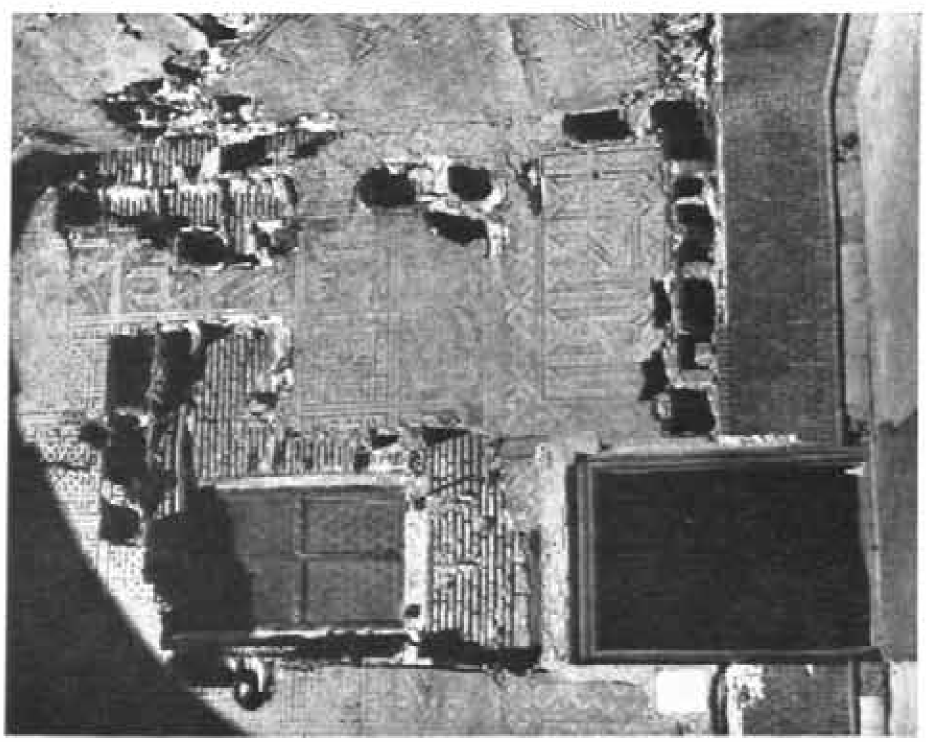


A



B

Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, before and B, after conservation. *See p. 128*

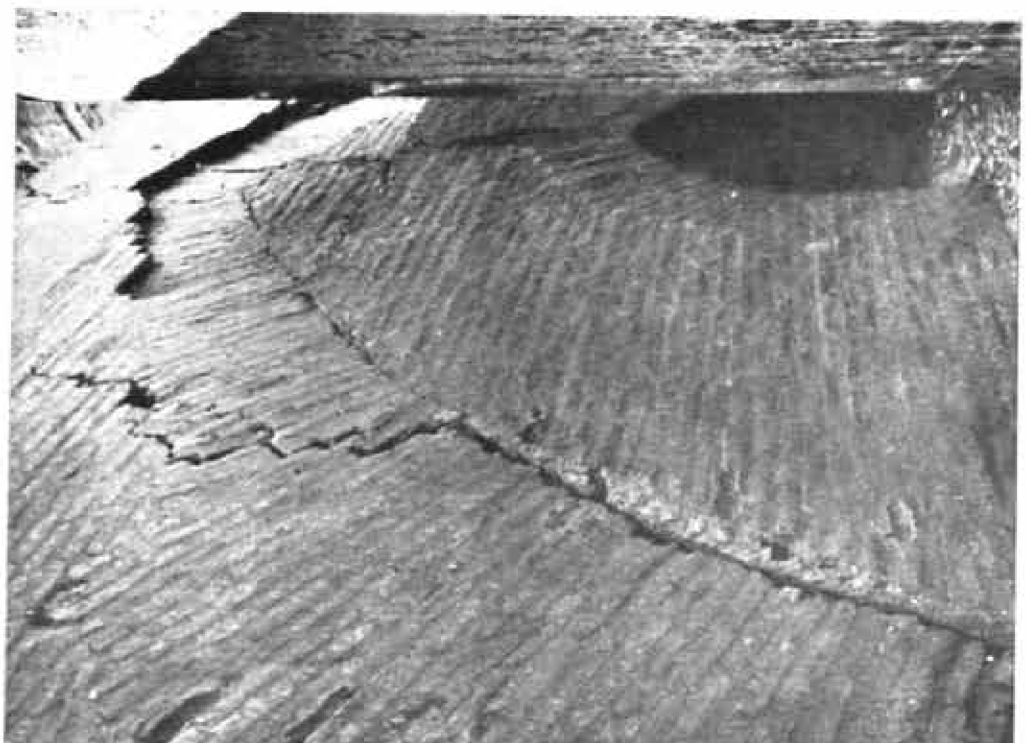


A

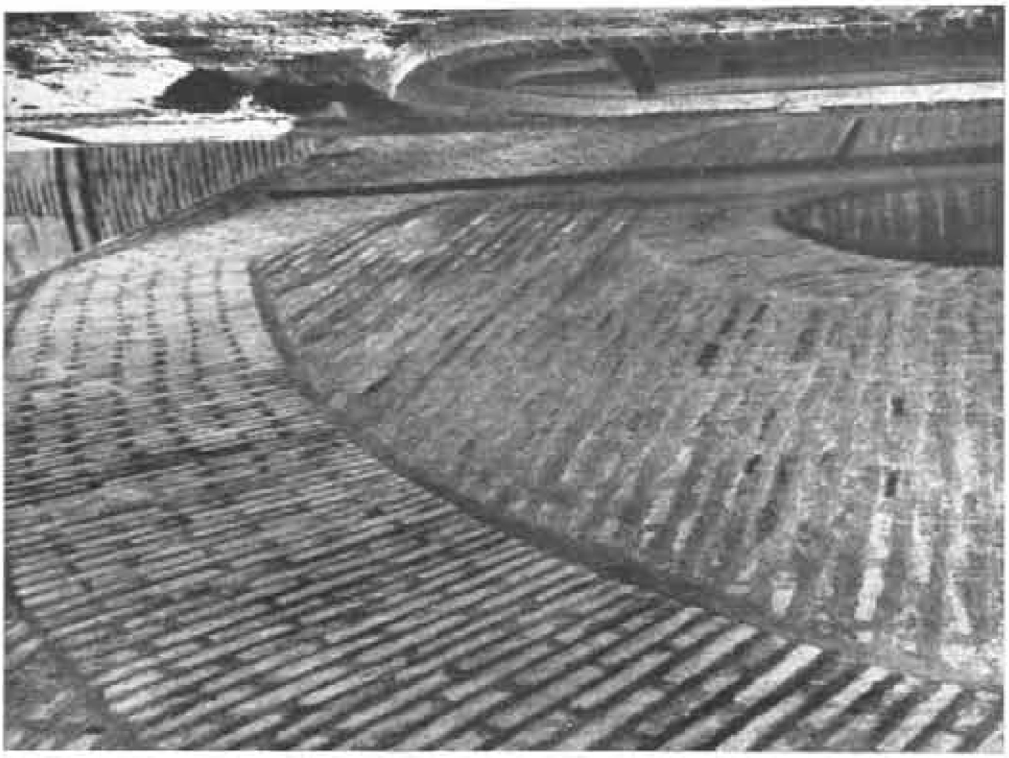


B

Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, *before and* B, *after conservation.* *See p. 128*

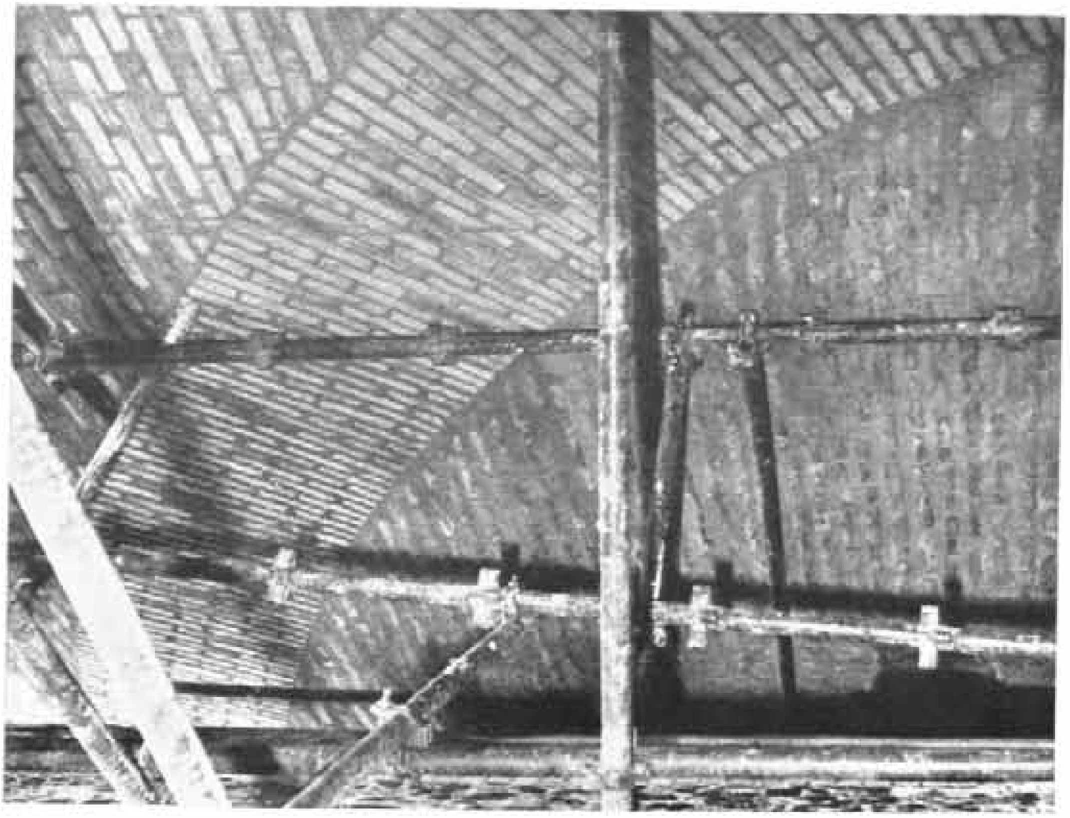


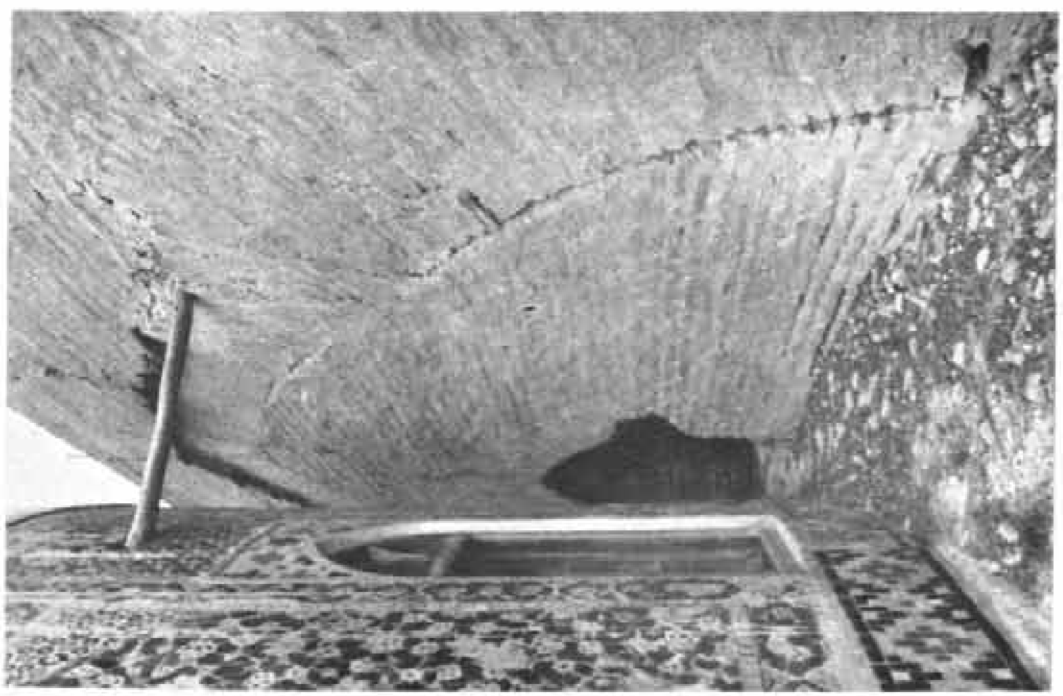
A



B

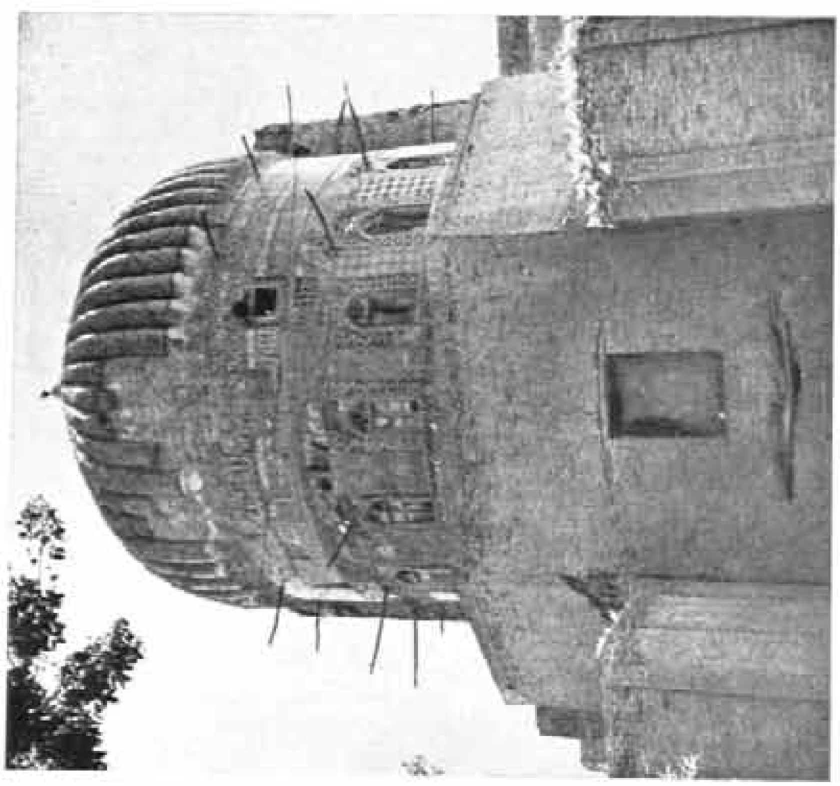
Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, before and B, After conservation. *See p. 128*



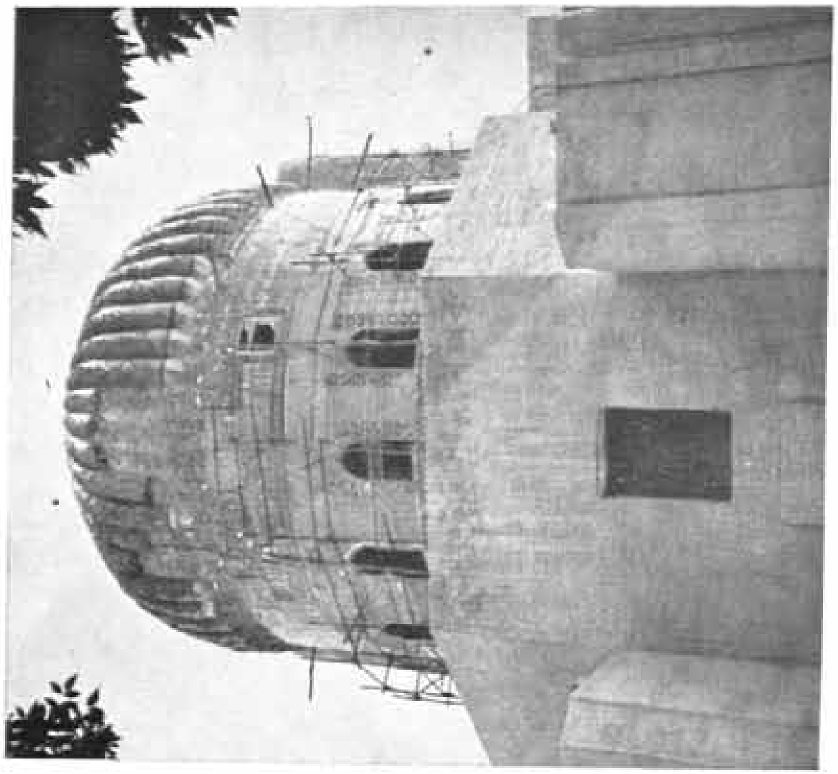


A B

Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, before and B, after conservation. *See p. 128*

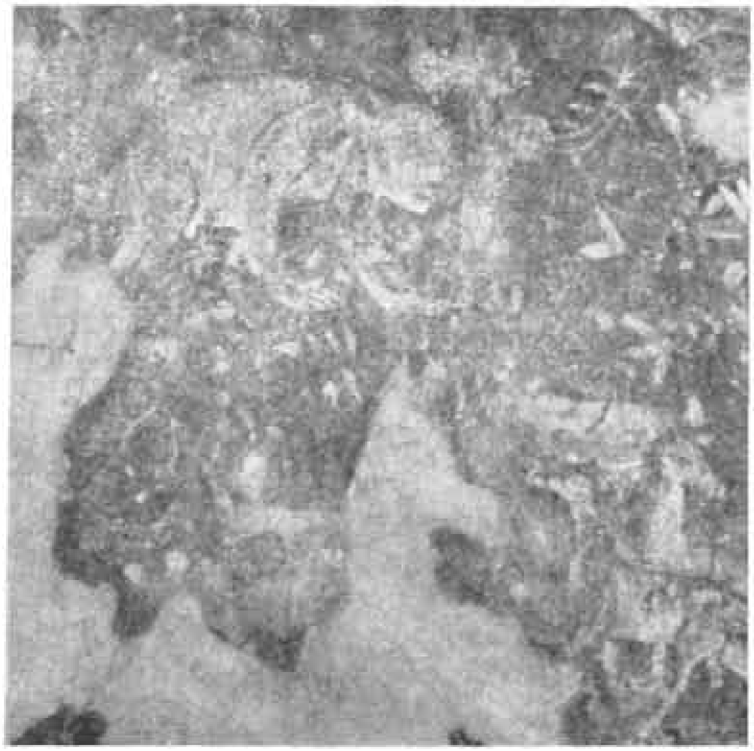


A



B

Balkh, Afghanistan : shrine of Khwaja Abu Nasar Parsa, A, before and B, after conservation. *See p. 128*



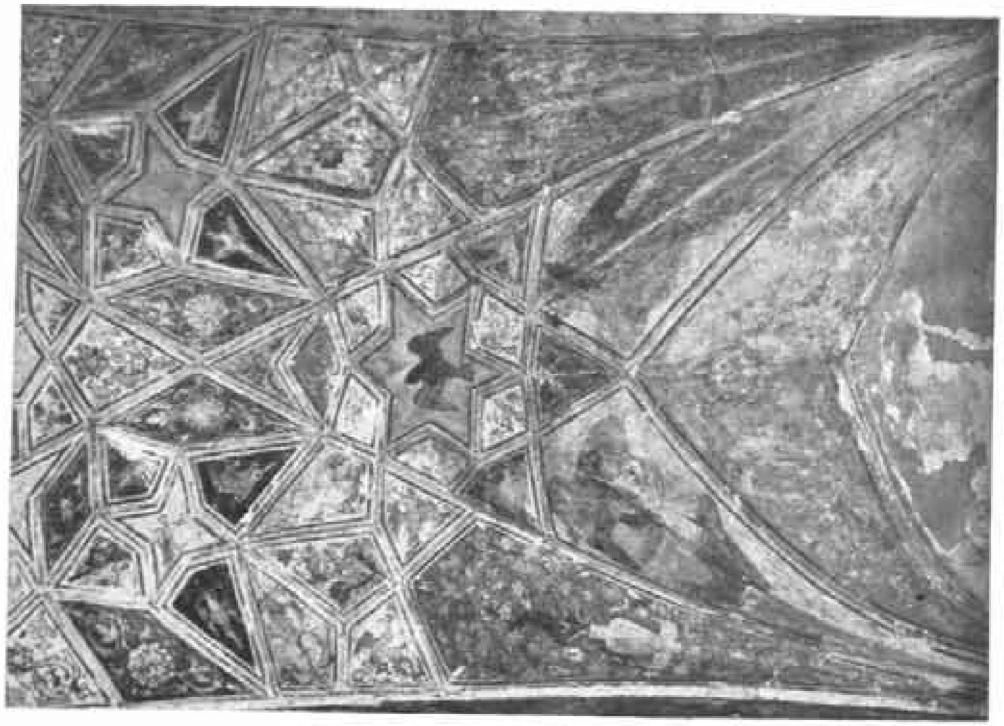
A



B

Ajanta ; *Cave* 17, A, *before and* B, *after chemical treatment*

See p. 131



B



A

Agra : Arambagh baradari, A, *before and* B, *after chemical treatment.* *See p. 135*